

BE

NEXTWORLD

\$4.95

NOVEMBER
1993

R&D Heroes
Who's Who in
Building Two



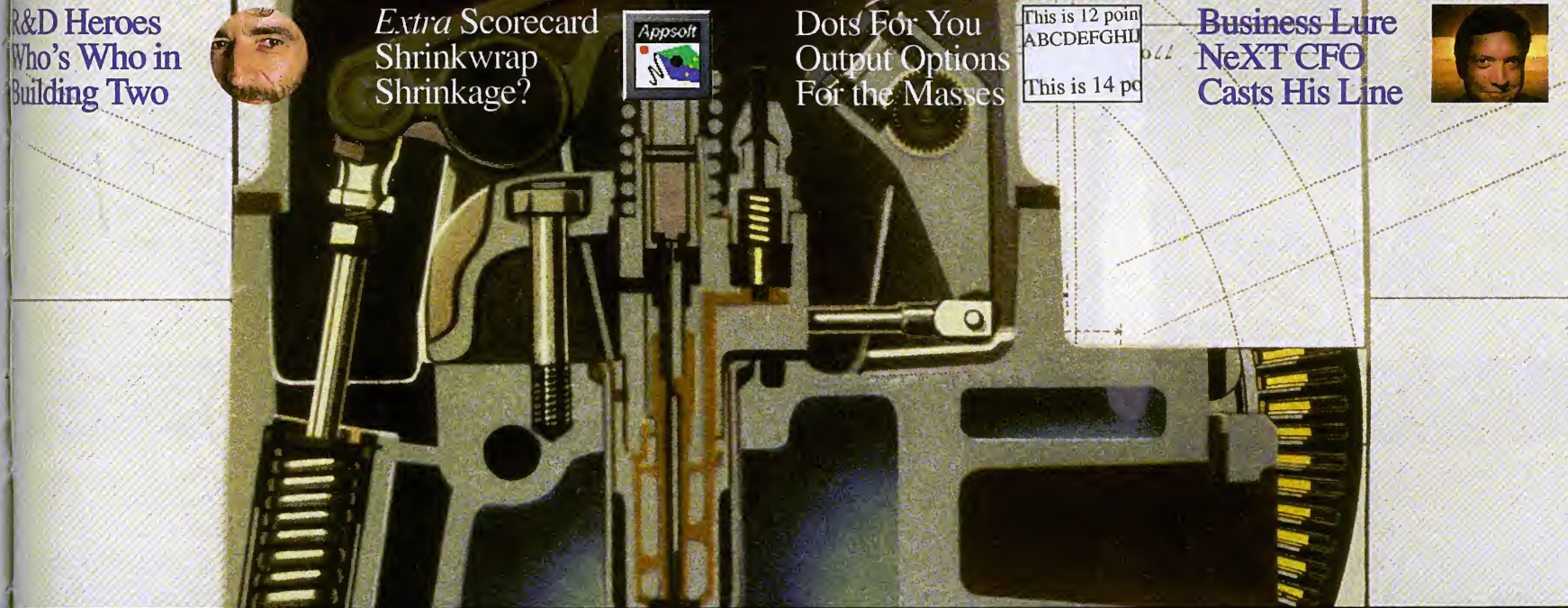
Extra Scorecard
Shrinkwrap
Shrinkage?



Dots For You
Output Options
For the Masses

This is 12 point
ABCDEFGHIJ
This is 14 po

Business Lure
NeXT CFO
Casts His Line



DRIVING THE ENTERPRISE



10 NEXTSTEP
Data Engines



ch Text
ormatted
from the
atabase.

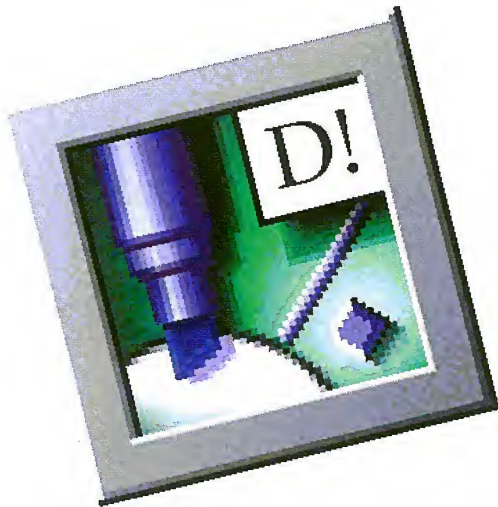
Letters
in static
ields are
when the
and the
s to hold
he data.

umbers,
ers and
rs, too!

ables to multi-
ents. Retrieve
query tools.
orts with an
guage.
bjective
ob NeXT began.
r so easy.

IVE
ogies, Inc.
info@object.com

The Best Mission Critical Applications Are the Ones You Didn't Have to Write

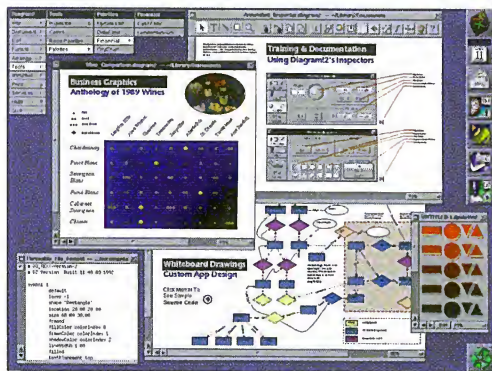


DIAGRAM! 2™

Whether you're drafting a presentation, creating business or CASE graphics, or managing projects, there's a world of work to be done outside your "mission critical" custom apps. And that's where Lighthouse Design delivers NEXTSTEP's clearest advantage—great productivity software seamlessly integrated with the world's most powerful development environment.

Business and Technical Graphics

With a revolutionary and much-imitated "drag and drop" drawing metaphor, Diagram! 2 is the first drawing program for any platform to focus on business and CASE graphics. "Intelligent" lines and labels, customizable drawing palettes and an "open" file format let you think and draw simultaneously, and use your work as more than just pretty pictures. That's why Diagram! is NEXTSTEP's best-selling drawing program.



Diagram! speeds the creation and revision of information graphics.



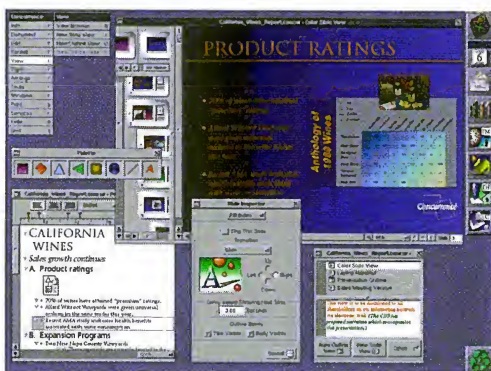
CONCURRENCE 2™

Presentation & Outlining

By tightly integrating outlines and presentations, Concurrence speeds the production of high-quality proposals and briefings. Print the results to any PostScript® device, from laser printers to 35mm slide makers, or deliver them via NeXTMail to desktops throughout your organization. Now in its second release, Concurrence 2 has a host of new features including NEXTSTEP object linking for "live graphics," and support for PowerPoint® file conversion.

Comprehensive Project Management

TaskMaster breaks new ground in serious project management with a powerful task and resource outliner, drag-and-drop resource assignments, and interactive Gantt charts. As NEXTSTEP's first comprehensive project management program,



Concurrence is NEXTSTEP's premiere outlining and presentation application.



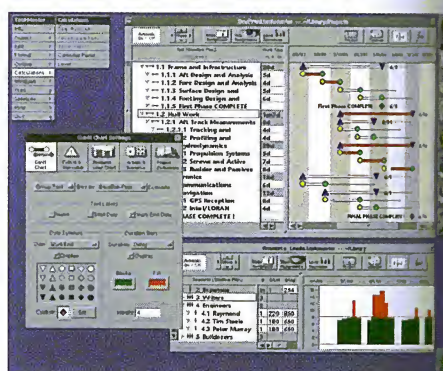
TASKMASTER™

TaskMaster provides support for planning, tracking and analyzing large and small projects. Advanced features include support for multi-document subprojects, automatic assignment from resource pools, priority-based levelling and importing data from spreadsheets and popular project management applications. TaskMaster minimizes training costs by incorporating user interface elements common to both Diagram! and Concurrence.

Lighthouse Design: We're Delivering the Power of NEXTSTEP.

For more information, and a free brochure, contact NeXTConnection

**1-800-800-NeXT
+1-603-446-3383**



TaskMaster introduces comprehensive project management for NEXTSTEP.

©Copyright 1993, Lighthouse Design, Ltd. All Rights Reserved. Diagram!, the Diagram! logo, Concurrence, the Concurrence logo, TaskMaster, the TaskMaster logo, Lighthouse Design, and the Lighthouse Design logo are all trademarks of Lighthouse Design, Ltd. PostScript is a registered trademark of the wonderful folks at Adobe Systems, Inc. NEXTSTEP is a registered trademark of our very good friends at NeXT, Inc. PowerPoint is a registered trademark of those fine people at the Microsoft Corporation. All other trademarks are the property of their respective owners. Specifications are subject to change without notice. This advertisement was created by weight, not by volume. Some settling may have occurred during the shipping and handling of this magazine, and as a result, this ad may not appear to cover the entire page. Caution should be taken not to expose this advertisement to open flame, because it will burn. Combustion can be effectively retarded by submerging in water, or by shaking rapidly while saying, "ouch, ouch."

Circle 29 on reader service card

2929 Campus Drive Suite 250
San Mateo, CA 94403
415/570-7736 415/570-7787 (fax)
800/366-2279



STAI
From triggers to
businesses: P

BY DAN
SIM

E-MAIL,
From UUCP to si
Com

d'ART's Dots brin
machines to

BY SI

L
Wet Paint an
functi

BY Y

Our ratings for D.

M
Lighthouse Des

BY SI

DESKT
Metaresearch's Soun
mi:

PER:
Sirius Solutions' Ch

BY Y

Ri

NEXT
Steve Jobs drops pro

ations Write



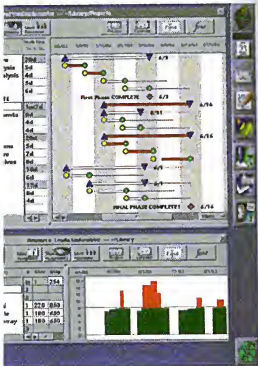
ASTER™

upport for planning,
g large and small projects
clude support for multi-
s, automatic assignment
priority-based levelling,
om spreadsheets and
gement applications. And
s training costs by
terface elements common
. Concurrence.

We're Delivering the Power

rmation, and a free
act NeXTConnection:

1-800-NeXT
3-446-3383



Project management for NeXTSTEP



NEXTWORLD

November, Volume 3, Issue 7

Feature

START YOUR ENGINES 24

From triggers to transactions, back ends drive data for businesses: Part II of NeXTWORLD's report on NEXTSTEP databases

BY DANIEL MILES KEHOE AND
SIMSON L. GARFINKEL

Reviews

E-MAIL, E-MAIL EVERYWHERE 34

From UUCP to simple dial-up connections, Transfer and Connect It! deliver your e-mail

BY SETH ROSS

DOTS ENOUGH 35

d'ART's Dots brings the art of printing from NEXTSTEP machines to a world of non-PostScript printers

BY SIMSON L. GARFINKEL

LOOKING GOOD 36

Wet Paint and TIFFany II give users Photoshop functionality under NEXTSTEP

BY RICK REYNOLDS

Community

"ALIVE AND WELL" 6

Behind the scenes at NeXT's robust software R&D efforts

BY LEE SHERMAN

BIG FISH 8

Like any good fly fisherman, NeXT's new CFO casts with the best lure

BY DAN LAVIN

FROM DOWN UNDER TO EVERYWHERE 9

Australian developer Xedoc ports NetInfo to a mixed-environment world

BY SIMSON L. GARFINKEL

EVOLUTIONARY MAN 10

After leaving science, Bill Tschumy found his niche as a specialized software developer

BY LEANN COULTER

PLUS Ten Most Wanted, New in Shrinkwrap, On the Net, and User Group News

C O N T E N T S

BOX SCORES 37

Our ratings for Dell and Lucky Goldstar 486 hardware

BY M. CARLING

MAKE OR BUY? 38

Lighthouse Design's Foundation Classes kit speeds development projects

BY SIMSON L. GARFINKEL

DESKTOP AUDIO STUDIO 39

Metaresearch's SoundWorks has all the tools you'll need for mixing CD-quality sound

BY LEE SHERMAN

PERSONAL FINANCE 40

Sirius Solutions' CheckSum gives your checkbook a better bottom line

BY DONALD WILSON

REVIEWS DESK 42

News

NEXTWORLD EXTRA 17

Steve Jobs drops product hints in Europe; Fremont factory auctioned off

Viewpoints

THE NEXT WORLD 3

Dan Ruby wanders around NeXT's field of dreams

LIP SERVICE 4

Readers' forum

DEVELOPER CAMP 32

Simson Garfinkel says the API, not the UN, will save third-party developers

NEXT INK 33

Dan Lavin sees new consultants and integrators as keys to NeXT's success

VANISHING POINT 48

John Perry Barlow is glad to see the world "read all about it"

NEXT GAMES 48

Scott Kim sorts it all out

Cover Illustration by Malcolm Tarlofsky

Wrestle WordPerfect™ Futz with FrameMaker™ Or simply use Pages™



"Pages represents a breakthrough
in document processing that should appeal
to users at all levels"

NeXTWORLD June 1993

"Instant Pages — just add content... watch fully formed pages take
shape before your very eyes"

Publish Magazine

"What you see is what you really wanted...
Pages is one of the best arguments for NeXT"

Ester Dyson, Release 1.0

"Impressive user interface... the system offers a lot of
innovative ideas and solid functionality"

Seybold Report

"Awesome in its simplicity"

Bove & Rhodes Report

Pages is Shipping!

Call now for our special introductory offer

800 772-5335



Pages Software Inc, 9755 Clairemont Mesa Blvd., San Diego, CA 92124 USA

Pages is a trademark of Pages Software Inc

WordPerfect is a trademark of WordPerfect, Inc. FrameMaker is a trademark of Frame Technology Corp.

Circle 59 on reader service card

NeXTWORLD

Vol. 3, No. 7 NOVEMBER 1993

President Gordon Haight

Publisher Jeannine Barnard

Editor in Chief Daniel Ruby

EDITORIAL

Managing Editor Eliot Bergson

Senior Reviews Editor Dan Lavin

Senior Technology Editor Simon L. Garfinkel

Associate Designer Beth Kamoroff

Contributing Editors Joe Barello, John Perry Barlow,

Tony Bove and Cheryl Rhodes, Ben Calica,

M Carling, Daniel Miles Kehoe, Scott Kim, Robert Lauriston,

Charles L. Perkins, Rick Reynolds, Seth Ross,

Lee Sherman

ART AND DESIGN

Earl Office San Francisco, California

PRODUCTION

Director of Manufacturing Jayne Boyer

Manufacturing Manager Hilal Sala

Advertising Coordinator David Zink

ADVERTISING SALES

Associate Publisher Steve Fricke

415/267-1784

Western Sales Manager Laurie Eddy

415/978-3188

ADMINISTRATION

Operations Manager Graciela Eulate

Director of Information Services Kevin Greene

IMI Corporate Manager Denise Garcia

CIRCULATION

Circulation Manager Catherine Huchting

Single Copy Sales Director George Clark

Single Copy Sales Representative Marty Garcher

Circulation Assistant Jason Paul Muscat

IDG CORPORATE ADMINISTRATION

Director of Finance Vicki Peilen

Financial Analyst Madeleine Buckingham

Accounting Manager Pat Murphy

To reach NeXTWORLD by mail or courier, use this address: NeXTWORLD, 501 Second St., San Francisco, CA 94107. You can also contact NeXTWORLD via the Internet at nextworld@nextworld.com, via MCI mail at NeXTWORLD, or via fax at 415/978-3196. NeXTWORLD is published monthly by Integrated Media, 501 Second St., San Francisco, CA 94107, a subsidiary of IDG Communications, the world leader in information services on information technology. Basic subscription rate is \$39.90 for 12 monthly issues. Foreign orders must be prepaid in U.S. funds with additional postage. For Canada, add \$15. All other foreign orders, add \$40 for airmail and \$15 for surface delivery. Fax 415/442-1891 to charge VISA/MC. For new subscriptions or subscriber-service questions, call toll-free 800/685-3435; in Tennessee or from outside the U.S., call 615/377-3322; write P.O. Box 5038, Brentwood, TN 37024-9817; or e-mail subscrip@nextworld.com. For permission to quote or reproduce editorial material from NeXTWORLD, send a written request stating the issue date, article, page number(s), and exact text of the material to: Reprints and Permissions, NeXTWORLD Production, 501 Second St., San Francisco, CA 94107. For back issues of NeXTWORLD, write to: Back Issues, NeXTWORLD Circulation; \$8 per issue; \$18 per issue outside U.S. prepaid. POSTMASTER: Send address changes to NeXTWORLD, P.O. Box 5038, Brentwood, TN 37024-9817 or call 615/377-3322. Editorial and business offices: 501 Second St., San Francisco, CA 94107; 415/243-0600. NeXTWORLD is a publication of Integrated Media. Printed in the United States of America. NeXTWORLD is a trademark of NeXT and is used under license. This publication is not affiliated with NeXT. Copyright © 1993 Integrated Media. All rights reserved. Canadian GST #124669433.

IDG: WORLDWIDE

NeXTWORLD is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 194 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA'S Computerworld Argentina, Infoworld Argentina; ASIA'S Computerworld Hong Kong, PC World Hong Kong, Computerworld Southeast Asia, PC World Singapore, Computerworld Malaysia, PC World Malaysia; AUSTRALIA'S Computerworld Australia, Australian PC World, Australian Macworld, Network World, Reseller, IDG Sources; AUSTRIA'S Computerwelt Osterreich, PC Test; BRAZIL'S Computerworld, Mundo IBM, Mundo Unix, PC World, Publish; BULGARIA'S Computerworld Bulgaria, Edeworld, PC & Mac World Bulgaria; CANADA'S Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; CHILE'S Computerworld, Informatica; COLOMBIA'S Computerworld Colombia; CZECH REPUBLIC'S Computerworld, Elektronika, PC World; DENMARK'S CAD/CAM WORLD, Communications World, Computerworld Danmark, LOTUS World, Macintosh Produktkatalog, Macworld Danmark, PC World Danmark, PC World Produktguide, Windows World; ECUADOR'S PC World; EGYPT'S Computerworld Middle East, PC World Middle East; FINLAND'S MikroPC, Tietoviikko, Tietoverkko; FRANCE'S Distributive, GOLDEN MAC, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Telecoms & Reseaux; GERMANY'S Computerwoche, Computerwoche Focus, Computerwoche Extra, Computerwoche Karriere, Information Management, Macwelt, Netzwelt, PC Welt, PC Woche, Publish, Unit; HUNGARY'S Alaplap, Computerworld SZT, PC World; INDIA'S Computers & Communications; ISRAEL'S Computerworld Israel, PC World Israel; ITALY'S Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; JAPAN'S Computerworld Japan, Macworld Japan, SunWorld Japan, Windows World; KENYA'S East African Computer News; KOREA'S Computerworld Korea, Macworld Korea, PC World Korea; MEXICO'S Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico,

MacWorld, Mundo Unix, PC World, Windows; THE NETHERLANDS' Computer! Total, LAN Magazine, MacWorld; NEW ZEALAND'S Computer Listings, Computerworld New Zealand, New Zealand PC World; NIGERIA'S PC World Africa; NORWAY'S Computerworld Norge, C/World, Lotusworld Norge; Macworld Norge, Networld, PC World Ekspres, PC World Norge, PC World's Product Guide, Publish World, Student Data Unix World, Windowsworld; IDG Direct Response: PANAMA'S PC World; PERU'S Computerworld Peru, PC World; PEOPLE'S REPUBLIC OF CHINA'S China Computerworld, PC World China, Electronics International, China Network World, PC HIGH TECH BEIJING'S New Product World; IDG SHENZHEN'S Computer News Digest; PHILIPPINE'S Computerworld, PC World; POLAND'S Computerworld Polska, PC World/Computer; PORTUGAL'S Cerebro/PC World, Com. Informatica/Computerworld, Mac; ROMANIA'S PC World; RUSSIA'S Computerworld-Moscow, Mir - PC, Set; SLOVENIA'S Monitor Magazine; SOUTH AFRICA'S Computing SA, SPAIN'S Amiga World, Computerworld Espana, Comunicaciones World, Macworld Espana, NeXTWORLD, PC World Espana, Publish, SunWorld; SWEDEN'S Aral, ComputerSweden, Corporate Computing, Lokala Naver/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Dataingenjoren, Masi Data, Windows World; SWITZERLAND'S Computerworld Schweiz, Macworld Schweiz, PC & Workstation; TAIWAN'S Computerworld Taiwan, Global Computer Express, PC World Taiwan; THAILAND'S Thai Computerworld; TURKEY'S Computerworld Monitor, Macworld Turkey, PC World Turkey; UKRAINE'S Computerworld; UNITED KINGDOM'S Line Magazine, Macworld, SunWorld; UNITED STATES' AmigaWorld, Cable in the Classroom, CD Review, OX Computerworld, Desktop Video World, DOS Resource Guide, Electronic News, Federal Computer Week, Federal Language, GamePro, IDG Books, Infoworld, Infoworld Direct, Laser Focus, Macworld, Multimedia World, Network World, NeXTWORLD, PC Games, PC Letter, PC World, Publish, Sumeria, SunWorld, SWATPro, Video Event; VENEZUELA'S Computerworld Venezuela, MicroComputerworld Venezuela; VIETNAM'S PC World Vietnam.

returned to NeXT morning in September line, no end, no superlative.

Instead, 715 lots of floor. Everything from pi to top-quality Herman M cans. Also, row after row of Printers, and CD-ROMs.

The scene was a sale. Company, auctioneers to pose of an asset that was and joy. Roaming the pre-eral hundred used-equip dealers, professional salvmunity old-timers, and assers. A contingent of for managers and design er hardware guru Rich Pag last look at faded glory.

I wandered through t area, and cafeteria, all sti with each item tagged wi room, the whiteboard st including the words: "M intact after some catastro pretty much what did ha to inter the remains.

By late morning, as t lift. The catalog did not r notice. This was not a fo-

Solut

Your

- Ext
- Adv
- On
- Har

Call T

*NeXT and NeXT lo

LD

el
rflow,
Lauriston,
is,

ne

her

IN

ORLD, 501 Second St., San
via the Internet at
via fax at 415/978-3196.
ond St., San Francisco, CA
information services on
hly issues. Foreign orders must
i. All other foreign orders, add
arge VISA/MC. For new sub-
i Tennessee or from outside the
37024-9817; or e-mail
editorial material from
age number(s), and exact text
action, 501 Second St., San
Back Issues, NeXTWORLD
ASTER: Send address changes
il 615/377-3322. Editorial and
3-0600. NeXTWORLD is a
ca. NeXTWORLD is a tra-
ded with NeXT. Copyright ©
ST #124669433.

ix, PC World, Windows; THE NETHER-
staal, LAN Magazine, MacWorld; NEW
r Listings, Computerworld New Zealand,
d; NIGERIA'S PC World Africa; NOR-
d Norge, C/World, Lotusworld Norge,
rworld, PC World Ekspress, PC World
duct Guide, Publish World, Student Data,
world; IDG Direct Response; PANAMA'S
nputerworld Peru, PC World, PEOPLE'S
IAS China Computerworld, PC World
rmational, China Network World; IDG
G'S New Product World; IDG SHEN-
r News Digest; PHILIPPINE'S
orld; POLAND'S Computerworld Poland,
ORTUGAL'S Cerebro/PC World, Correo
world, MacIn; ROMANIA'S PC World;
orld-Moscow, Mir - PC, Sety; SLOVE-
ine; SOUTH AFRICA'S Computing S.A.;
World, Computerworld Espana,
rld, Macworld Espana, NeXTWORLD,
ublish, SunWorld; SWEDEN'S Attack,
porate Computing, Lokala Natverk/LAN,
PC, Macworld, Mikrodatorn, PC World,
i (CAP), Datalingenjoren, Maxi Data,
TZERLAND'S Computerworld Schweiz,
i, PC & Workstation; TAIWAN'S
in, Global Computer Express, PC World
Y'S Thai Computerworld; TURKEY'S
op, Macworld Turkiye, PC World Turkiye,
erworld; UNITED KINGDOM'S Lotus
rld, SunWorld; UNITED STATES'
in the Classroom, CD Review, CIO,
top Video World, DOS Resource Guide,
ral Computer Week, Federal Integrator,
Infoworld, Infoworld Direct, Laser Event,
a World, Network World, NeXTWORLD,
PC World, Publish, Sumeria, SunWorld,
ent; VENEZUELA'S Computerworld
puterworld Venezuela; VIETNAM'S PC

I returned to NeXT's Fremont factory for the last time one sunny morning in September. This time, there was no humming assembly line, no engineers meeting in handsome conference rooms, no superlatives about state-of-the-art automation.

Instead, 715 lots of items were stacked neatly on the spotless cement floor. Everything from pick-and-place robots and wave-solder machines to top-quality Herman Miller office furniture to paper shredders and trash cans. Also, row after row of NeXTcubes, MegaPixel Displays, Color Printers, and CD-ROM drives.

The scene was a sale by the Ross-Dove Company, auctioneers to Silicon Valley, to dispose of an asset that was once NeXT's pride and joy. Roaming the preview areas were several hundred used-equipment and furniture dealers, professional salvagers, NeXT community old-timers, and assorted curiosity seekers. A contingent of former NeXT factory managers and design engineers, including hardware guru Rich Page, was back for one last look at faded glory.

I wandered through the offices, reception area, and cafeteria, all still fully fixtured but with each item tagged with a lot number. Upstairs in the main conference room, the whiteboard still displayed the scribbblings of meetings past, including the words: "Make Better Stuff." It was as if the room was left intact after some catastrophe wiped out the inhabitants. In fact, that is pretty much what did happen. Six months later, I mused, we'd come back to inter the remains.

By late morning, as the auctioneers hit their pace, my gloom began to lift. The catalog did not read "liquidation sale" or some similar death notice. This was not a forced sale by a bankruptcy administrator raising

pennies on the dollar for creditors. No, this was a sale to dispose of "surplus assets to on-going software operations."

Not a funeral after all, just a day to raise some cash and tidy up loose ends. The point was evident in the prices bid for NeXT computers and peripherals. To the dismay of the bargain hunters, prices for black hardware held up above typical resale value. Why? Black hardware remains in demand because NEXTSTEP software is a viable business. Not to mention that it is still better than any white hardware on the market.

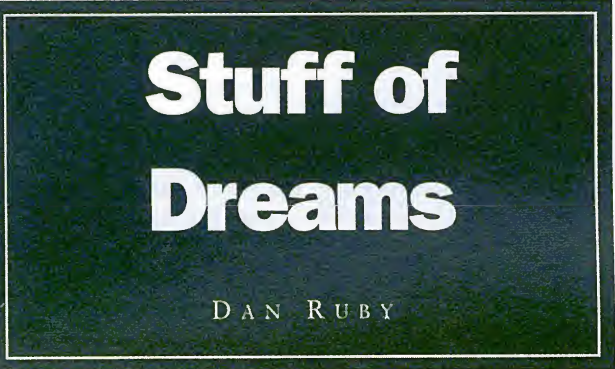
In the end, I'm not sure the auction of NeXT's factory has much meaning — just a footnote, perhaps, in computer-industry history. By now it is pretty clear that NeXT hardware never had a chance. It wasn't a matter of making better stuff. The stuff was plenty good; it just wasn't cheap enough or standard enough. Besides, the factory was always overkill, with far more capacity than demand.

Meanwhile, NEXTSTEP sales are far stronger today than when the factory was in full swing. More customers and more industry players take NeXT seriously now than at the beginning of this year. Some-

times you have to cut off a limb to save a life.

The crowd had thinned by the time the last lot, seven NeXTcubes, was auctioned off around 3:00 p.m. In another week or two, after the winning bidders had claimed their stuff and NeXT's facilities crew had stripped down the company logo from the building exterior, nothing would be left but the empty hulk of a factory building with a For Lease sign hanging out front. ♦

DAN RUBY is NeXTWORLD's editor in chief.



Solutions to Protect and Support Your NeXT Investment

- Extended Warranty Repair Programs
- Advanced Exchange Repair Services
- On Site Service Maintenance
- Hardware Help Desk

Call Today! 1-800-499-NeXT



©Bell Atlantic
Computer Technology Services
San Francisco Division
Fax: 510 - 732 - 3051

*NeXt and NeXT logo are trademarks of NeXT Computer Inc.

NeXT Systems and Peripherals

Refurbished NeXT Systems

.....All Models Available.....

New NeXT Peripherals:

NeXT 400 dpi Printer - \$850.00

NeXT Color Printer - \$1,700.00

(Supported by NeXTstep 3.1 Intel)

CD-ROM Drive - \$350.00

NeXT Supplies:

EP-S Toner Cartridge - \$85.00

Black Ink Cartridge (6 Pack) - \$82.00

Color Ink Cartridge (6 Pack) - \$123.00

Optical Media - \$60.00

Prices subject to availability; shipping, taxes not included.

Circle 69 on reader service card

Our far-flung correspondents

Although I don't live in South Succotash, I was encouraged to send in my comments after reading your editorial "Bright Lights, Big City" (*NeXTWORLD*, September). After having my NEXTSTEP '486 installation inexplicably blow up after three weeks of happy computing, I realized that this seemed an awful lot like the heady days of Windows 3.0. The only solace and help at that time were the various PC publications that covered solutions to the problems users faced.

TEJBIR SIDHU
New York

NeXTWORLD's mission is not just to say that NEXTSTEP is the best, but to show why it is. I really hope that you'll be an engine that will motivate readers who see NEXTSTEP for the first time to invest their energy in it.

ERIC DE LA TRIBOUILLE
Urbana, Illinois

You should increase the technical content of the magazine. Include features like: Why is DBKit important? Real-life stories of reusable objects. How to find a good consultant. Is UI design important for custom apps? Source-code control for mortals. In short, address some of the technical issues that are important to the people who are buying the developer kits.

NeXTWORLD has always been, and still is, much too focused on the developer community and NeXT itself. There's far too much whining about NeXT and an overabundance of arm-chair management consulting.

ANDY TURK
Foster City, California

Do the NEXTSTEP community a favor by trying to add the viewpoint of individual users and budget-constrained business users. I'd like to see you deal in an objective way with the issues that people who don't work for Swiss Bank or McCaw might be interested in. The big user companies want to dictate to NeXT what it should be doing. That may be good for them, but I think it is slowly destroying NeXT's viability.

JOHN BARTLEY
St. Charles, Missouri

I can't help but think that most of your readers are developers. While I wouldn't turn *NeXTWORLD* into a programming publication, I think a monthly section on programming/technical issues would be an interesting addition to the magazine. I really liked it when Andrew Stone gave programming tips.

PETER ACCORTI
Falls Church, Virginia

While NeXT pursues the corporate and developer marketplaces, please see to it that this wonderful user environment is not forgotten. Call greater attention to the DTP and graphics abilities and tools of NEXTSTEP. This is my greatest interest in the platform, and I would hate for one of its strengths to be neglected in the rush towards mission-critical corporate apps.

STEVE WEINTZ
Urbana, Illinois

I'd like to see more system-administration articles and tips. The most useful article that I have ever read in *NeXTWORLD* was "Linking Into the Internet" (Fall 1991). Reduce the length of articles in the "Community" section. Yes, I am interested in who is using NEXTSTEP for what, but I don't need many paragraphs to tell me and *NeXTWORLD Extra* does a good job of it. While you're at it, bring back hints and tips.

RICHARD RUTH
Los Angeles

I am sure there are many others like me who just want to get on with using their NeXTs, and others who want to get on with using their white hardware with NEXTSTEP. We are not interested in buying new hardware every other week; we are interested in knowing how we can use what we already have more productively. *NeXTWORLD* used to be a means of feeling in touch with others with like interests. Now it seems too much like other computer magazines.

DAVID PICKETT
Bloomington, Indiana

NeXTWORLD is too much orientated towards North America. In the past, you included interesting articles on the use of NEXTSTEP in Mexico and Russia. Many of us here in Germany would like to read more about this. For now, it seems that the NeXT game is mostly played in the U.S. Maybe *NeXTWORLD* is just too small to cover the whole planet with information about NeXT.

MIRKO BRANDNER
Stuttgart, Germany

Although I think you do a fine job with the relatively objective, if not impartial, analysis of events and products in the NeXT world, you should know that by the rest of the world you are considered an advocacy journal.

Please do a little more advocating.

For example, last month these pages contained an exasperated (and, because it was so wrong, exasperating) comment by a system administrator who claimed he didn't know how to incorporate NEXTSTEP into a company trying to use open-system standards. Unbelievably, the statement went unchallenged.

Keep up the good work, but please don't ever forget where you get your name.

GARY W. LONGSINE
Lincoln, Nebraska

This selection of letters gives a flavor for the diversity of the NeXT community. We are carefully considering all the suggestions as the magazine continues to evolve. — Dan Ruby

Real value

Regarding your Intel benchmarks ("How They Stack Up," September), a computer's compile speed is far less important to me than its overall reliability in the field. As a developer of turnkey systems, competent, single-source hardware and tech support

on all of its components is a high priority for me. Please continue to report on which companies are best set up to deliver and support NEXTSTEP on Intel. What's the use of shaving seconds off a compile if you have to wait on hold long-distance for twenty minutes when you call tech support, or if it takes a week to get the OS up and running because the interaction of components is not fully understood by the hardware provider?

TIM ROMANO
Swarthmore, Pennsylvania

That's why performance is just one component of our hardware ratings, balanced by factors such as NEXTSTEP orientation, support, and value. — NW

Downgradability?

I have to agree that drivers are the most important area of development for NeXT at this time. I have an Intel-based PC with a Diamond Viper VESA video card and a Adaptec 1742 SCSI controller. Both of these do not have available drivers for NEXTSTEP 3.1.

NeXT is creating a problem for itself with two different groups. One group feels that NEXTSTEP needs much-too-expensive hardware to run. The second group, myself included, has some of the better hardware on the market and still cannot run NSFF. I find it disappointing that I would have to spend money to downgrade my system performance to run NSFF.

JONATHAN GARDNER
Sterling, Virginia

For the record

In the September "New in Shrink-wrap," BarCodeKit was incorrectly listed as a BenaTong product. BarCodeKit is a trademark of, and sold by, Hot Technologies (617/252-0088).

In "News in Brief" (*NeXTWORLD Extra*, October), Yrrid's phone number was incorrect. The correct number is: 919/968-7858.

In "Design Your Own Voice-mail" (October), the white-hardware price for the mix box and call software was incorrect. It costs \$813.

In October's Lt. Sullivan column, the phone number for Frame Technology should have been 408/433-3311.



To

Single

Drives can operate independently



Introducing CY-8505 with Processor.

Working drive can store up to 90 M perfect for use

But perfect ceiling when

Four selected plus *offline* the flexibility any way you

TRUE C

Alliant
Alpha Micro
Altos
Apollo
Arix
AT&T
Basic-4
Concurrent

Rock Landing Co

ponents is a high
Please continue to
companies are best
and support NEXT-
What's the use of
s off a compile if
it on hold long-dis-
minutes when you
t, or if it takes a
OS up and running
raction of compo-
understood by the
ider?

ennsylvania

formance is just one
our hardware rat-
by factors such as
rientation, support,
W

ibility?

that drivers are the
it area of development
is time. I have an Intel-
a Diamond Viper VESA
a Adaptec 1742 SCSI
h of these do not have
rs for NEXTSTEP 3.1.
creating a problem for
different groups. One
at NEXTSTEP needs
ensive hardware to run.
roup, myself included,
he better hardware on
l still cannot run NS/FIP.
pointing that I would
l money to downgrade
formance to run NS/FIP.

GARDNER
inia

cord

nber "New in Shrink-
CodeKit was incorrectly
naTong product. Bar-
trademark of, and sold
chnologies (617/252-

Brief" (NeXTWORLD
ober), Yrrid's phone
s incorrect. The correct
919/968-7858.

Your Own Voice-mail"
the white-hardware
e mix box and call soft-
nncorrect. It costs \$813.

's Lt. Sullivan column, the
lber for Frame Technol-
have been 408/433-3311.

To Backup 50 GB, Two Recording Heads Are Better Than One.

Single:

Drives can operate independently.

Cascade:

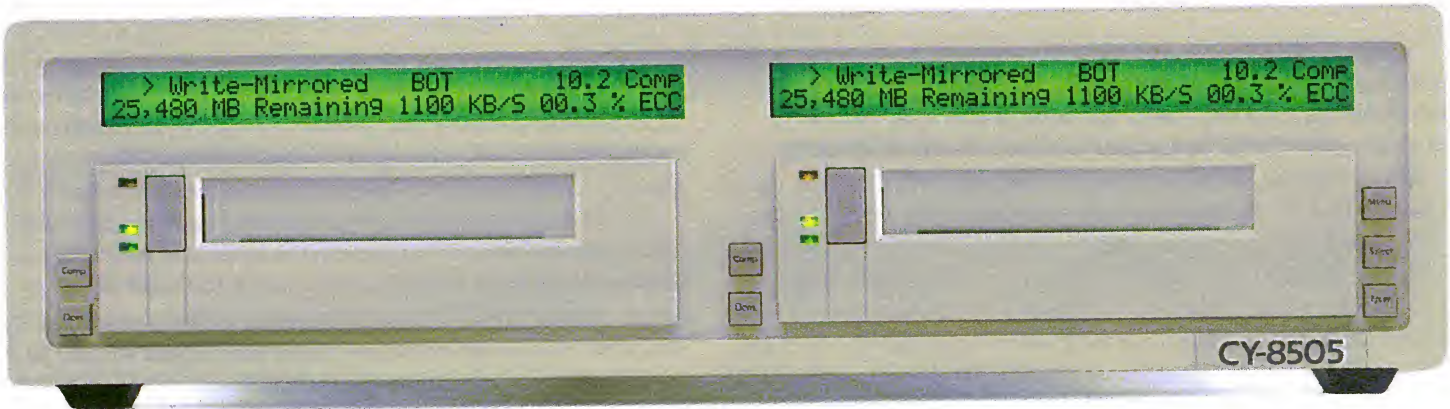
Data automatically writes to the second tape when the first tape is full.

Mirroring:

Writes the same data to both tapes simultaneously.

Striping:

Writes data to two tapes at once, in alternate blocks, doubling capacity and speed.



Introducing the dual drive CY-8505 with the Advanced SCSI Processor.

Working independently, each drive can store up to 25 GB, at speeds of up to 90 MB per minute. So it's perfect for unattended backup.

But performance *really* hits the ceiling when the drives *work together*.

Four selectable recording modes, plus *offline copy and verify*, give you the flexibility to write 50 GB of data any way you need to.

Consider it a data storage management tool, a solution that will solve the problems you encounter every day. The need for higher capacity and speed; the need to make duplicate tapes for off-site storage and data exchange; the need for real-time status information—and the need to save resources and boost productivity *on every level*.

Each tape drive offers the most advanced in data recording technology. Our *hardware data compression*

option is the fastest available. And it's switch-selectable, so you can read and write uncompressed data for compatibility with other sites. Add *accelerated file access* to locate a single file in an average of 85 seconds. And we even offer a *data encryption* option that lets you control access to sensitive data.

All this, and the *proven* reliability and price performance of 8mm helical scan tape storage.

We back this turnkey solution with a *two year warranty* that includes responsive service and technical support from our in-house engineering group.

If you need a data storage solution that *means business*, call today for more information at:

(804) 873-9000

CONTEMPORARY
CYBERNETICS

TRUE COMPATIBILITY WITH

Alliant	Convergent	DEC Unibus	IBM S/38	NeXT	Pertec	STC
Alpha Micro	DataGeneral	Gould/Encore	ICL	Novell	PICK	Stratus
Altos	DEC SCSI	HP	Intergraph	OS/2	Plexus	Sun
Apollo	DEC BI-Bus	IBM AS/400	Macintosh	PS/2	Prime	Texas
Arix	DEC DSSI	IBM Mainframe	McDonnell	Parallel Port	Pyramid	Instruments
AT&T	DEC HSC	IBM RISC/	Douglas	PC 386/ix	Sequent	Unisys
Basic-4	DEC Q-Bus	6000	Motorola	PC MS-DOS	Silicon	Ultimate
Concurrent	DEC TU/TA81	IBM RT	NCR	PC Xenix/Unix	Graphics	Wang—and more

Rock Landing Corporate Center • 11846 Rock Landing • Newport News, VA 23606 • Fax: (804) 873-8836

Circle 25 on reader service card

“Alive and Well”

N E X T R E S E A R C H A N D D E V E L O P M E N T

IN THESE TOUGH ECONOMIC TIMES, EVEN CORPORATE GIANTS LIKE IBM AND APPLE HAVE looked to increase profitability by slashing their R&D budgets. But despite NeXT's recent transition to software, R&D remains a top priority at the down-sized firm. “The culture of this company is to do great technology,” says engineer Paul Hegarty. “Once that culture is in place, it's difficult to pull it out. Conveniently, it also makes business sense.”

In keeping with Steve Jobs's assertion at NeXTWORLD Expo that “R&D is alive and well at NeXT,” the company is continuing to improve what has become its only product, rather than merely porting NEXTSTEP to as many hardware architectures as possible.

There will always be only one visionary at NeXT, but it is the R&D group in software that is charged with bringing those visions into focus. NeXT's R&D group is headed up by codirectors of engineering, Paul Hegarty and Jean-Marie Hullot. Hullot also has the additional title of chief technical officer.

PRODUCT FOCUS

Early versions of NEXTSTEP were most notable for their ability to tame the complexities of a UNIX-based operating system while still providing all of the power. “In the '80s, a lot of emphasis was put on user interface,” explains Hullot. “With InterfaceBuilder and the Application Kit, I think we solved the problem. The key for the '90s is [object] distribution and persistency, and we want an elegant solution to that as well.”

The research effort at NeXT doesn't exist in a vacuum. Instead of concentrating on pie-in-sky concepts that may never see the light of day, the emphasis is on products that will actually make it to market. “We do some amount of future research, where we investigate technology that may be of benefit to our customers. Then we take the results of that research and we go through the process of making it real,” says Hegarty.

“A long-term vision is fine,” adds Hullot, “but at the same time, I don't want people working on something that won't arrive for a few years.” Because NEXTSTEP is object oriented, the engineers have been able to add new technologies to the OS as they've been completed, without having to do a complete rewrite every time they come up with an improvement.

For all of the advanced technology that has emerged from the NeXT labs, the R&D effort is concentrated on technology that meets a real business need. For the time being, that doesn't include whiz-bang technologies such as handwriting and voice recognition. For example, NEXTIME, the company's forthcoming standard architecture for media integration, has been specifically tuned to support both real-time video conferencing and on-screen movie playback.

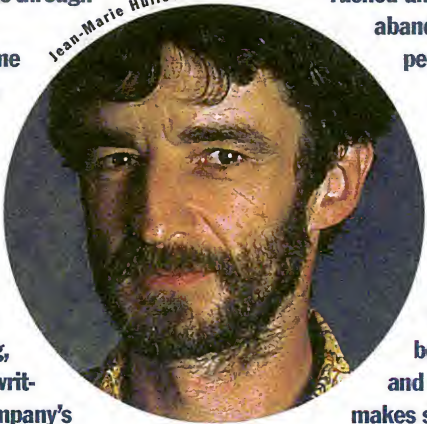
NEXTIME originated as a research project on image-compression routines undertaken by Chief Scientist Richard Crandall back in the summer of 1992. The original intent was to come up with a way to add store-and-forward video capabilities to Mail. “When we started on it, one of the big questions was whether we should provide a framework for teleconferencing or something more like QuickTime,” recalls Software Engineer Peter Graffagnino, who now heads the NEXTIME team. “Originally, we thought of it as a way to leverage the networking aspects of NEXTSTEP. It soon became apparent that once you have live movies, you're going to want some way of storing them as documents.”

With limited resources and a design philosophy that encourages small

teams of people working on very specific projects, NeXT has achieved a better track record in delivering new technologies than many of its much larger competitors. Instead of taking a brute-force approach to software development, the R&D team concentrates on putting enabling technologies in place that can be leveraged by others. “We spend our time working on new technologies like Driver Kit,” explains Hegarty. “We could have taken five people and had them go off and write 100 UNIX drivers, or we could have had those same five people go off and design an object-oriented driver architecture that made it simple for people to write drivers.”



Paul Hegarty



Jean-Marie Hullot

LOOKING IN, LOOKING OUT

NEXTSTEP is a combination of original work done at NeXT and the integration of complimentary technologies developed outside the company – Mach, PostScript, and UNIX, for example, provide the foundation for the object-oriented system software. Included among the in-house achievements are distributed objects, interapplication communication, and a user interface that is both aesthetically pleasing and easy to use. With NEXTSTEP 3.0, NeXT added RenderMan to the mix, seamlessly integrating it with PostScript so that developers could add 3-D graphics to their applications without having to develop a new printing model. In 3.1, support for Kodak's PhotoCD was added, making it easier than ever to work with high-quality photographic images within NEXTSTEP.

Hullot says NeXT tries to support existing standards wherever they make sense, often improving their usefulness by integrating them at the system level. After the decision was made to employ an object-oriented storage mechanism in a future version of NEXTSTEP, the R&D group evaluated existing object-oriented databases, going so far as to announce at Object World in 1992 its decision to use software from Burlington, Massachusetts-based Object Design (ODI). The rushed announcement proved ill-advised, however, and NeXT has now abandoned its alliance with ODI in favor of its own approach to persistent objects.

OBJECTIVE STRATEGY

Just as NEXTSTEP's object-oriented technology has allowed other companies to more quickly develop custom applications, it also speeds NeXT's own development efforts; faster prototyping, the capability to subclass existing objects, and new objects that plug right into the existing system-software architecture are just a few of the benefits. As the principal designer of both InterfaceBuilder and Workspace Manager, Hullot sees his role as the person who makes sure that the benefits of object-oriented design accrue to both developers and users alike. If you want a sneak peak at NEXTSTEP's future, says Hullot, you have only to look a little closer at the present version.

His problem-solving approach to R&D results in technologies that can later be extended throughout the system. For example, the distributed-object technology found in NEXTSTEP 3.0 first appeared as background copy-and-move capabilities in Workspace Manager 2.2; the Portable Distributed Objects that will be available near the end of the year is based on current technology in NEXTSTEP 3.0, 3.1, and 3.2. “It's part of the strategy that we started with distributed objects,” says Hullot. “Distribution and persistency should work very well together to provide a very powerful client-server solution that is very well integrated with NEXTSTEP.”

by LEE SHERMAN



Top of th

From

When NEXTSTEP 3.2 is re-ture, beyond bug fixes, wi-cards, network interfaces, necessary step in satisfyin-technology freaks, however of the OS.

The next full rev of NI lead in object-oriented op-such as Windows NT, OS/2 object-oriented database t-of its own approach. In ad-dled apps, including a reva

In addition to work on exciting technologies – an

The original DBKit was feel to it; updates of the kil-ented paradigm, from the l-will eliminate all of the sub-layer, to produce a more in-dependent on the NEXTSTE-ier to bring the advantages equation.

Far more visible is NEX-tion, which makes NEXTSTE-NEXTIME, video becomes ju

has achieved a better
its much larger com-
ware development, the
in place that can be
technologies like
people and had them
ave had those same
nted driver architec-
ite drivers.”

ING OUT
nal work done at NeXT
ry technologies devel-
PostScript, and UNIX,
for the object-oriented
ie in-house achieve-
pplication communica-
esthetically pleasing
KT added RenderMan
tScript so that develop-
out having to develop a
was added, making it
tages within NEXTSTEP.
wherever they make
em at the system level.
storage mechanism in
existing object-oriented
in 1992 its decision to
ject Design (ODI). The
er, and NeXT has now
its own approach to

ATEGY
ed technology has
ickly develop custom
's own development
bility to subclass exist-
g right into the exist-
just a few of the
oth InterfaceBuilder
role as the person who
ted design accrue to
k peak at NEXTSTEP's
t the present version.
nologies that can later
tributed-object tech-
ound copy-and-move
tributed Objects that
rent technology in
at we started with dis-
ncy should work very
ion that is very well inte-

PHOTOGRAPHS BY MARY MERRICK

C O M M U N I T Y



Top of the R&D agenda: new DBKit and NEXTIME

From Kernel to Interface

When NEXTSTEP 3.2 is released near the end of the year, its primary new feature, beyond bug fixes, will be increased compatibility with the many sound cards, network interfaces, and printers on the market for PCs. This will be a necessary step in satisfying the corporate imperative at NEXTSTEP sites. For technology freaks, however, the real excitement will come with future releases of the OS.

The next full rev of NEXTSTEP is expected to leverage NeXT's acknowledged lead in object-oriented operating systems, keeping it in front of competitors such as Windows NT, OS/2, and Pink. Updates were expected to include the object-oriented database technology from ODI, but NeXT discarded that in favor of its own approach. In addition, there will be improvements to all of the bundled apps, including a revamped version of Mail.

In addition to work on NEXTSTEP, R&D technicians are working on two new exciting technologies – an as-yet unnamed update of DBKit, and NEXTIME.

The original DBKit was object oriented but maintained a strong relational feel to it; updates of the kit will probably attempt to closer model the object-oriented paradigm, from the UI level all the way to mapping data. The updated kit will eliminate all of the subtle dependencies contained in DBKit's current access layer, to produce a more independent access layer. Because it will no longer be dependent on the NEXTSTEP user interface, in-house developers will find it easier to bring the advantages of the DBKit to the server side of the client-server equation.

Far more visible is NEXTIME, NeXT's new standard for multimedia integration, which makes NEXTSTEP much more viable as a multimedia platform. With NEXTIME, video becomes just another data type that can be manipulated the

way users now work with text, graphics, and sound.

The standard will ensure that video sequences can be shared among different applications. A speedy symmetrical-compression algorithm is at the center of NEXTIME, providing the ability to do real-time video compression and decompression. Existing standards, such as Apple's QuickTime and Microsoft's Video For Windows, take much more time to compress video sequences as to decompress them, limiting their use in applications such as video teleconferencing.

In keeping with the R&D group's dual focus on both users and developers, NEXTIME will be tightly integrated with the rest of the AppKit, making it much easier to develop video-aware applications under NEXTSTEP than on other platforms. NEXTIME's modular architecture will allow compression/decompression algorithms, file-format parsers, and new device profiles to be plugged right in, ensuring backwards compatibility with the thousands of QuickTime and Video For Windows movies already out there. Included with the software will be a demo app for movie playback, objects such as a View subclass, and a simple controller that developers can use to integrate movie recording and playback into their applications.

by LEE SHERMAN



TEN MOST WANTED

No bagged items this month, but a hubbub of activity at NeXT bodes well for near future. “NS 4.0 feature set” became “product road map” among signs of interim releases with new technologies. Old favorites “expanded marketing message” and “aggressive IHV marketing” slipped out of top ten with focus on near-term results.

RANK	LAST ISSUE	ISSUES ON LIST	ITEM	COMMENT
1	1	4	Drivers, drivers, drivers	3.2 stays #1 till ship
2	3	4	Expanded indirect channel	Sleuth is unimpressed
3	5	3	Direct sales results	Big sites in pipeline
4	–	1	Rebirth of app market	Too late for AppBrain, but it's coming
5	10	2	Product road map	January DevCon?
6	2	2	SoftPC shipment	At native speed
7	6	2	Preloaded notebooks	Custom configs are tough
8	4	2	PDOs everywhere	Key to O•E results
9	–	2	More NS ports	Progress on PA lends hope
10	9	9	NeXT management stability	Another stable month; one more and in the bag

From Down Under to Everywhere

G L O B A L D E V E L O P E R

ONE OF THE HARDEST THINGS ABOUT BASING A SOFTWARE COMPANY IN AUSTRALIA is the time-zone difference. "New York is almost on the other side of the planet," says Brett Adam, director of marketing for Sydney-based Xedoc. It's not at all uncommon for Adam to go to sleep at 3 a.m. after working with a customer in California, only to be woken up by a call from the Big Apple just two hours later.

But Xedoc's way of doing business is also its mission. Its self-described motto of "NetInfo Everywhere" – bringing the system that NEXTSTEP uses to distribute user accounts, passwords, and other administrative information throughout a network onto machines from HP, Sun, DEC, and others – supports companies as they enter the age of global communications and WAN internetworking becomes the dominant means of communication.

Xedoc got its start five years ago, when three friends who met at a PostScript service bureau – Adams, J. Matthew Pryor, and Cameron Bromley – decided to create their own software company. "We swore a pact that we would never write an accounting system for someone because that would drive us insane," recalls Adams. Instead, they started looking for unusual, challenging jobs.

The company's first big contract was developing a database publishing system for printing corporate telephone directories. Although the system was first built on a Macintosh, it was soon moved over to Steve Jobs's fledgling NeXTcube to take advantage of the system's Display PostScript interpreter.

Back then, Xedoc's name was Codex, an archaic term meaning "book." Unfortunately, Codex is also a registered trademark of Motorola in most parts of the world (except Australia). Codex discovered the name conflict one day when a lawyer from Motorola called to say that the corporate giant was going to open an office in Australia. He told them that Codex would have to change its name. "We said 'suck it,' – you'll have to buy the name from us," Adam remembers. Motorola opened its Australian office with the name "Motorola Codex."

Codex's next project was developing a distributed database for a law firm that wanted to distribute names and calendar information over the network. As they developed the specifications for the project, what they were trying to build wound up looking more and more like NeXT's NetInfo database.

"We knew about NetInfo, but NetInfo only ran on NeXT," Adam says. Codex's system had to be multiplatform. On a lark, Adam sent an e-mail message to NeXT saying, "We have this project here for which NetInfo would be ideal, but we have to have it running on other machines. Is there any way we could get the source code and port it?"

Adam's message coincided with repeated requests to NeXT from some of its largest customers, who wanted to be able to administer all of their workstations with the same set of tools. A few days later, Adam got a

reply from Redwood City: "We were thinking of doing the same thing. Why don't we get you the source code?"

One of the first NeXT customers to get wind of the NetInfo port was an unnamed government agency near Washington, DC. A NeXT software engineer told Adam that he would be getting a telephone call from a person who ran a very large site with about a thousand Sun workstations. The engineer wouldn't tell Codex the name of the agency or last name of the person who was going to be calling. "He said, 'It's the kind of client that if they told you the surname, they would have to kill you,'" Adam remembers.

And the firm still had its old problem with names. Codex wasn't allowed to operate under its own name in the United States because of

Motorola's trademark. One night, the founders were staring at the company logo with a friend who was a graphic designer, trying to figure out what to do. The solution: flip the letters around. Xedoc was born.

Today, Xedoc's version of NetInfo is running on Sun, HP, IBM, and SGI workstations at more than 50 of NeXT's largest customers, including Swiss Bank Corporation and Trident Data Systems. "Most of the large sites are either customers or are talking to us," Adam says.

Xedoc's NetInfo also plays a key role in NeXT's Portable Distributed Object strategy: The version of NetInfo running on HP Series 900 servers comes to HP by way of Australia.

In the meantime, Xedoc has grown to nine people and numerous part-time contractors. While consulting still accounts for nearly 60 percent of that figure, product sales are rapidly growing – with NetInfo accounting for 80 percent of that revenue. (The remainder is made up by a version of Apple Events that Xedoc sells for UNIX workstations.

"We're growing very strongly," says Adam, adding that the company has "got a number of irons in the fire for large-scale NEXTSTEP development in this country." If those come through, Xedoc will be scouring the outback for NeXT-aware programmers. The company is also aggressively pursuing distributors around the world.

Although the company has toyed with the idea of opening a regional office in the United States, it consists right now of little more than a phone and an answering machine. Adam is certain that he doesn't want to move to America the Beautiful from Down Under. "There's a lot more space here. People aren't as frenetic, and the pace of life is calmer."

Most of all, he says, "the computer industry isn't all in one place. [In California,] it's incestuous as all hell. I've been to the valley, but I prefer to live here. It's easier to be a bigger fish in a smaller pond." ♦

by SIMSON L. GARFINKEL



For Sydney-based Xedoc, all roads lead to NetInfo.

CONNECTIVITY, COMMUNICATIONS, AND EMULATION
NETWATCH
Fat-binary SNMP network management
AGENT
Integrates NEXTSTEP components into a network
Ridgeback Solutions
310/456-6094

MIN 2.0E
English version of data, fax, and voice system
Alembic Systems International
303/799-6223

DATABASE AND INFORMATION MANAGEMENT
DATAFILE 2.0
Fat-binary and feature upgrade product
Stone Design
505/345-4800

GUPTA SQLBASE SERVER
Network database server
Parabase Software
206/828-8172

NOTEBOOK 1.2
Multiarchitecture-format update
Millennium Software Labs
415/321-3720

QUICKBASE SQL 3.3
NEXTSTEP relational DBMS
SoftDesign Solutions
203/629-0970

OFFICE ETIQUETTE
Office-productivity enhancement
The App Foundation
301/384-0980

PENCIL ME IN 1.1
Fat-binary and update of scheduler
BOOK 3.1
Multiarchitecture version of address book
Sarrus Software
415/345-8950

REDMARK 1.2
Fat-binary update of on-screen markup software
Epitome
615/675-0910

TERADATA ADAPTOR
Accesses Teradata RDBMS
NCR Corporation
310/524-7473

MATH/SCIENCE
MLAB
Mathematical- and statistical-modeling system

ILLUSTRATIONS BY GORDON STUDER

ing the same thing.

he NetInfo port was C. A NeXT software one call from a per-sun workstations. ency or last name of 's the kind of client 'kill you,' " Adam

es. Codex wasn't States because of ark. One night, the ng at the company who was a graphic igure out what to do. ie letters around.

s version of NetInfo is , IBM, and SGI work- ian 50 of NeXT's ncluding Swiss Bank rident Data Systems. sites are either cus- ig to us," Adam says. ifo also plays a key table Distributed ie version of NetInfo ies 900 servers comes ustralia.

ne, Xedoc has grown numerous part-time consulting still ' 60 percent of that s are rapidly grow- o accounting for 80 enue. (The remainder rsion of Apple Events r UNIX workstations.) ig very strongly," says the company has "got in the fire for large- those come through, e programmers. The round the world.

of opening a regional tle more than a phone doesn't want to move 's a lot more space calmer."

t all in one place. [In e valley, but I prefer to ond." ♦

PHOTOGRAPH BY WILLIAM DUKE



NEW IN SHRINKWRAP

AUGUST 1 TO SEPTEMBER 1

CONNECTIVITY, COMMUNICATIONS, AND EMULATION

NETWATCH
Fat-binary SNMP network monitor
AGENT
Integrates NEXTSTEP computers into any network
Ridgeback Solutions
310/456-6094

MIX 2.0E
English version of data, fax, and voice-mail system
Alembic Systems International
303/799-6223

DATABASE AND INFORMATION MANAGEMENT

DATAFILE 2.0
Fat-binary and feature upgrade of flat-file product
Stone Design
505/345-4800

GUPTA SQLBASE SERVER
Network database server
Parabase Software
206/828-8172

NOTEBOOK 1.2
Multiarchitecture-format update
Millennium Software Labs
415/321-3720

QUICKBASE SQL 3.3
NEXTSTEP relational DBMS
SofDesign Solutions
203/629-0970

OFFICE ETIQUETTE
Office-productivity enhancement application
The App Foundation
301/384-0980

PENCIL ME IN 1.1
Fat-binary and update of scheduling software
SBOOK 3.1
Multiarchitecture version of address-book app
Sarrus Software
415/345-8950

REDMARK 1.2
Fat-binary update of on-screen document-markup software
Epitome
615/675-0910

TERADATA ADAPTOR
Accesses Teradata RDBMS
NCR Corporation
310/524-7473

MATH/SCIENCE

MLAB
Mathematical- and statistical-modeling system

Civilized Software
301/652-4714

OBJECTS, PALETTES, AND KITS

BARCODEKIT 3.10
Collection of palettes for bar-code functionality in apps
Hot Technologies
617/252-0088

OTSTRINGKIT
Kit of objects to streamline string-related functionality in code
Objective Technologies
212/227-6767

3270PALETTE
Collection of objects for building distributed network apps
Conexions
508/689-3570

PUBLISHING AND GRAPHICS

INTUITIV'3D 1.2
Modeling and rendering environment
Cub'x Systèmes
331/47.08.74.40

TAILOR
PostScript- and EPS-editing software
Alembic Systems International
303/799-6223

EXTRASLIDE
Driver for Polaroid CI500S film recorder
EXTRAREAD 1.0
OCR software
GS Corporation
415/257-4700

SCIENCE AND ENGINEERING

WHITELIGHT/ENGINEER 1.1
Fat-binary update of object-oriented business-modeling software
WhiteLight Systems
415/321-2183

TOOLS AND LANGUAGES

DEVMAN
Synchronizes multiprogrammer/multi-project software development
VNP Software
802/496-7799

UTILITIES

DRAGBOOK
Scrapbook utility with drag-and-drop access to resources
Digital Expressions
518/347-2463

TCPPRD
Printer driver for HP LaserJet4
Uptime Object Factory
411/313-0607

COMMUNITY

Big Fish

CHIEF FINANCIAL OFFICER



Dominique Trempont brings a sportsman's eye to NeXT's finances.

SOME WOULD SAY THAT DOMINIQUE TREMPONT'S AVOCATION, FLY-FISHING, IS NOT ALL that different from his vocation as the new CFO of NeXT: He has to help land that most elusive of fish, the giant corporate MIS account. In so doing, he has to use an efficient lure, because the new NeXT has only so many re-sources with which to cast. And of course, there are obvious comparisons to shivering in hip-deep water at 4 a.m.

Trempont, 39, was named CFO in August and put in charge of the finance, facilities, human resources, and legal departments. Perhaps even more important, he plays an active role in managing the company, serving on the six-member senior-management team that meets each Monday and includes fellow Europeans Bernhard Woebker and Jean-Marie Hullot.

"We're not about cold numbers. The role of finance is to summarize in numbers what is going on inside of a company. We help evaluate what is going on and what needs to be done," says Trempont.

Trempont has ample gear to tackle NeXT's challenges. Born in Paris, Trempont studied at the University of Louvain in Belgium and obtained a business degree from the INSEAD in Fontainebleau, France. He speaks French, Spanish, Dutch, and English. An inveterate sportsman, Trempont holds a black belt in judo and was on the Belgian Junior National Equestrian Team. Since his retirement from full-time sport, he has concentrated on the subtle craft of fly-fishing.

He spent his entire career after business school at Raychem, a multinational materials-science corporation. Trempont was often involved in turn-around situations, most recently restructuring the electronics division away from reliance on defense contracts. Under his tutelage, the division doubled profits on flat sales in one year.

Trempont says that he was lured into leaving Raychem by NeXT's technology and the executive team in place. He says he looked around Raychem and saw more and more retrenching and transitioning, while NeXT was already poised to move into the future.

He sees corporate America starting on the enormous PAGE 12

PHOTOGRAPH BY ERIC MILLETTE

NOVEMBER 1993 NEXTWORLD 9

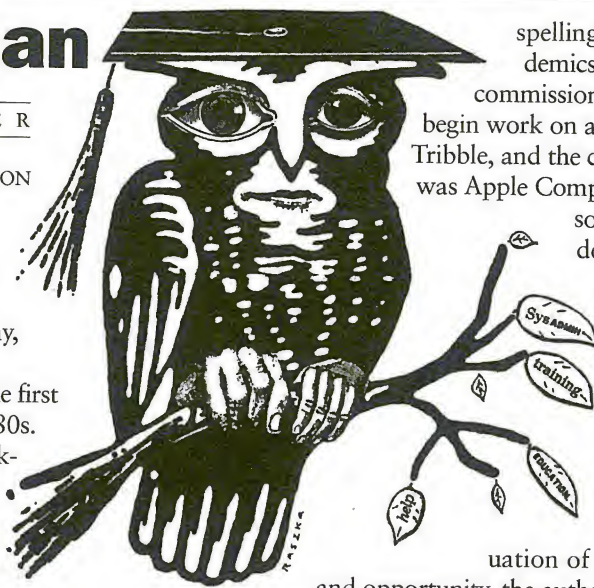
Evolutionary Man

SPECIALIZED DEVELOPER

AS ANY STUDENT OF ZOOLOGY KNOWS, CHANCE AND ADAPTATION play equal roles in evolutionary change. For Bill Tschumy, chance brought him out of the academic world and into NEXTSTEP programming, while adaptation guided him to make training, documentation, and interactive demonstration programs the focus of his one-year-old software company, Otherwise.

Tschumy was writing his Ph.D. thesis in zoology when the first dual-floppy-drive PCs were brought to market in the early '80s. After finding, though, that those PC tools were seriously lacking in software applications, Tschumy and two other grad students decided to remedy the situation and ventured into the software business.

Tschumy never did finish that thesis. While writing a



spelling checker designed for use in academics, Tschumy and his colleagues were commissioned by another university friend to begin work on a new project. That friend was Bud Tribble, and the company commissioning the work was Apple Computer, which needed a word processor for the first Macintosh then being designed. "We'd had absolutely no experience in writing a word processor," he explains, "but we said, 'Sure. Give us eight months.'" Three-and-a-half years and 120,000 lines of Motorola assembler code later, WriteNow was born.

But Apple went with MacWrite as its word processor. In a continuation of the curious combination of chance

and opportunity, the authors of WriteNow found themselves being courted by Steve Jobs. Stranded with a nearly complete

WriteNow and no resources to market it on their own, Tschumy and his colleagues adapted to the emerging situation by selling the marketing rights on their software. And Tschumy became employee number 18 at NeXT.

During the years that followed, Tschumy ported WriteNow to NEXTSTEP and became an integral part of the of the system-software team at NeXT. He adapted his roots in education by writing programs that explored training, alternative demoing concepts, remote displays, and journaling. From system-level AppKit design to programs like Show&Tell, the Guided Tour, and the NEXTSTEP 3.0 on-line help system, Tschumy's work meshed well with NeXT's credo of "enhanced productivity."

Now, at the head of his own software company again, Tschumy's concentration on education and training is paying off. Otherwise's first two products, aimed at integrating the training and administration of NeXT's large-scale corporate sites, are the culmination of his work towards enhanced communications.

ScreenCast, Otherwise's first released product, allows corporate users to broadcast their active screen over the network, complete with all typing and mouse actions. Remote users can view or interact with the broadcasted screen, allowing enhanced user support, training, and computer conferencing. Moreover, it can be used by system administrators to monitor and troubleshoot the network.

Another upcoming product, WatchMe, provides a similarly unique function. WatchMe will synchronously record screen actions along with a voice overlay, allowing you to create instant multimedia demonstrations that can be e-mailed to coworkers for training or discussion. With electronic communications and efficient training at the forefront of corporate management strategy more than ever before, Otherwise's products are destined to fill a key niche in NeXT's emerging business environments.

"To me, the word 'otherwise' means alternatives, other perspectives," Tschumy says. "As a company, Otherwise is creating alternative ways to communicate, educate, and inform. That's what we're all about." The quiet enthusiasm in Tschumy's voice is echoed by the background chatter of bird song. A rare flock of marbled murrelets come inland to nest? "No," he says, "Parakeets. I'm training them." ♦

by LEANN COULTER

ILLUSTRATION BY BRIAN RASZKA

NEW!
lower prices on
fax modem packages

**1 fax modem.
2 functions.
4 cubes.
No hassles!**

NXFax
BLACK & WHITE
SOFTWARE

802-496-8500

Bridge Street Marketplace, Waitsfield, VT 05673-1210 • Fax: 802-496-5112 • nxfax@bandw.com

Circle 79 on reader service card

- NeXTWorld, Best of Breed '93
A single fax modem should handle data and faxes. But switching between them is a high-attention hassle. Unless you're using NXFax. NXFax is intelligent fax software that flawlessly handles both fax and data calls. It supports high-speed modems from ZyXEL, Telebit, Supra, and others. And it's sold by people who live and breathe NeXT - for clear insight, answers, service, and support. It's the best way to get the most fax from NEXTSTEP. And at any price, the most from your money. **NXFax software \$135, modem packages with NXFax start at \$500.**

- NeXTWorld, Winter '92

Get t

Mesa is a po
provides pal
mission critic
SQL access c
manage your
Builder for pi
Mesa accept
markets, mec
and other so
able format f
When you ch
spreadsheet i
world of obj

ned for use in aca-
his colleagues were
university friend to
that friend was Bud
issioning the work
eded a word proces-
Macintosh then being
I had absolutely no
writing a word proces-
lains, "but we said,
us eight months." "
a-half years and
es of Motorola
ode later, WriteNow

e went with MacWrite
processor. In a contin-
mbination of chance
w found themselves
nearly complete
vn, Tschumy and his
lling the marketing
oyee number 18 at

WriteNow to NEXT-
m-software team at
ng programs that
mote displays, and
rams like Show&Tell,
lp system, Tschumy's
productivity."
again, Tschumy's con-
therwise's first two
nistration of NeXT's
work towards en-

llows corporate users
mplete with all typing
act with the broad-
ning, and computer
ministrators to moni-

a similarly unique
actions along with a
dia demonstrations
ussion. With elec-
refront of corporate-
ise's products are
ess environments.
s, other perspectives,"
; alternative ways to
e all about." The
: background chatter
: inland to nest?

NEXTSTEP™ = Objects

Σ MESA™ = Spreadsheet + Objects

Σ MESA™ + NEXTSTEP™ = 

Get the picture?

Mesa is a powerful, traditional spreadsheet that provides palettized objects for integration in your mission critical custom applications. Mesa contains SQL access capabilities to select, update, and manage your corporate database and a Visual Report Builder for professional-quality reports. Mesa accepts real time, real world data from financial markets, medical instruments, data/telephone switches and other sources, putting this information into a useable format for analysis and reporting. When you choose NEXTSTEP, choose Mesa, the only spreadsheet that integrates into the NEXTSTEP world of objects.



Athena Design, Inc.

17 St. Mary's Court, Boston, MA 02146 USA

1.617.734.6372

fax.1.617.734.1130 • info@athena.com

Floating License Manager and Site Licenses available.
Educational discounts available.

NeXT and NEXTSTEP are trademarks of NeXT, Inc.

Σ MESA™

Big Fish

project of completely re-engineering their business systems, with NeXT being two to three years ahead of the competition. And because Microsoft doesn't have nearly the market penetration in Europe that it has in the United States, Trempont sees even greater opportunities there.

Trempont considers himself in an enviable position in finance at NeXT; the company has already bit the bullet on costs and passed a turning point. After the completion of the Canon deal, NeXT should have completely restructured its debt and money in the bank.

"Forget yesterday's baggage," Trempont says. "View us as a start-up, and we are the most successful start-up anywhere with a great product, sales on track, a stellar management team, and a strong financial situation." In fact, that is the message Trempont will take to the financial markets to raise more money this fall. "We are substantially underinvested in Europe and Asia and are making choices and tradeoffs all the time," he said. With more funding, NeXT can expand into new markets domestically and abroad.

In addition to arranging new financing, Trempont plans to meet extensively with customers to maintain a client focus in his departments.

Interestingly enough, VP of North American Sales and Marketing Warren Weiss is also a fly fisherman. What lessons from this discipline apply to NeXT? In Trempont's words, "First, the fish always chooses the lure, not the other way around. And second, when a salmon rises to take the fly, don't hook it too quickly." Also, NeXT must practice the art of patience and take the long view, but that should be easier now that the company is scaled properly to show a profit based on 1994's plan.

That doesn't mean Trempont would sit idly by and rely too much on his lures and equipment. A good fly fisherman is always prepared to snare the big one. As he says, "We have realistic goals, but I see no reason that NEXTSTEP's installed base won't explode way beyond those figures. We have the right technology at the right time." ♦

by DAN LAVIN

"With VNP Software, we've optimized NEXTSTEP for custom application development."

Mike Adelson, Chrysler Financial Corporation

THE AccessKit™

Widely recognized in the NeXT community as the most advanced approach to database programming, the AccessKit provides transparent access to new or existing SQL databases through your own Objective-C classes.

UI Binder™

The palette that graphically binds object information to the UI, automates display and editing of object data and eliminates the need to write UI code. Provides complete support for standard and custom user interface objects.

DevMan™

A powerful tool to manage the complexities of group oriented software development - configuration management, source code control, release tracking, security. Makes it easy for multiple programmers to synchronize their work on large-scale projects.

IX Adaptor™

The DBKit adaptor for NeXT's Indexing Kit. IXAdaptor is the key to a simple, low-cost database solution on NEXTSTEP.



To order call: 802-496-7799

VNP Software · 10A Gardner Road · Cambridge, MA 02139
Fax 802-496-7790

e-mail :
Product_Info @vnp.com

Circle 75 on reader service card



Need a platform that can handle powerful new i486™ operating systems and applications?

The Keys Professional Workstation from Avnet Computer features outstanding i486 performance that's optimized for the fastest Intel486™ processors--up to 66MHz! Plus, Intel's next generation OverDrive™ processor based on Pentium™ microprocessor technology makes upgrade easy.

Looking for high resolutions and the fastest graphics available?

With resolutions up to 1280 x 1024 x 256 and a mach32-bit linear frame buffer, the Keys Professional Workstation is ideal for large image transfers and 32-bit operating systems like NeXTSTEP™, 486 and Windows NT.™

How about SCSI expansion for tapes, CD-ROMs and other devices?

On-board, industry-standard Adaptec 6x60 SCSI gives you complete external expansion flexibility for easy connection to SCSI peripherals.

Want to be wired for sound?

The Keys Professional Workstation supports 16-bit digital stereo audio for CD-quality sound--the perfect business audio for multimedia applications.

Take The Next Step
Toward More
Powerful Computing

The Keys Professional Workstation
From Avnet Computer

For the Power of a Graphics Workstation
Plus the Flexibility of a



(800) 426-7999



Intel is a registered trademark and i486, Intel486, OverDrive and Pentium are trademarks of Intel Corporation. NeXT and NeXTSTEP are trademarks of NeXT Computer. Windows NT is a trademark of Microsoft Corporation.

*The workstation of choice for NeXT™ users and developers. Custom built by Intel for Avnet Computer, a division of Avnet, Inc.

Circle 60 on reader service card

What's Next?
Keep up with the hottest computer market in the pages of NeXTWORLD. The only magazine dedicated to NeXT computers.

Plans to meet extension departments. And Marketing War's discipline apply to uses the lure, not the take the fly, don't f patience and take company is scaled

ely too much on his eared to snare the ee no reason that ose figures. We have

The Next Step Toward More Powerful Computing

Professional Workstation* From Avnet Computer

For the Power of a Graphics Workstation, Plus the Flexibility of a PC

ant to be red for und? e Keys professional workstation supports 16-bit digital stereo dio for CD-quality sound-- perfect business audio multimedia applications.

Call For A Free Video

Call today for a free video demo of the Keys Professional Workstation (while supplies last), plus information on Avnet Computer's wide range of value-added services.

*The workstation of choice for NeXT™ users and developers, custom built by Intel for Avnet Computer, a division of Avnet, Inc.

OverDrive and Pentium are trademarks of Intel Corp. computer. Windows NT is a trademark of Microsoft Corp.

rd

What's Next?

Keep up with the hottest computer market in the pages of NeXTWORLD. The only magazine dedicated to NeXT computers.

NeXTWORLD

Find out what's next and save MONEY too!

Yes! Please start my subscription to NeXTWORLD for just \$29.95. I'll get 12 MONTHLY issues, *guaranteed* to keep me informed about the hottest computer market. SEND NO MONEY NOW. We'll bill you later.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____

NeXTWORLD

For Canada add \$15 (includes 7% GST tax). All other foreign orders must be pre-paid in U.S. funds only and add \$40 for airmail delivery or \$15 for surface mail delivery. DO NOT SEND CASH. Check or money order accepted. FAX: 1-615-377-0525 to charge Visa/MC.

B31101

**NeXTWORLD
FOR ONLY
\$29.95!
That's 25%
OFF the
regular
subscription
price.**

Get a friend into NeXTWORLD for only \$29.95

Yes! Please start my subscription to NeXTWORLD for just \$29.95. I'll get 12 MONTHLY issues, *guaranteed* to keep me informed about the hottest computer market. SEND NO MONEY NOW. We'll bill you later.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____

NeXTWORLD

For Canada add \$15 (includes 7% GST tax). All other foreign orders must be pre-paid in U.S. funds only and add \$40 for airmail delivery or \$15 for surface mail delivery. DO NOT SEND CASH. Check or money order accepted. FAX: 1-615-377-0525 to charge Visa/MC.

B31102

**That's 25%
OFF the
regular
subscription
price.**

SAVE YOUR COMPANY MONEY!

Yes! Please start my Corporate Subscription to NeXTWORLD for 10 or more people in my office or department. I'll get 12 MONTHLY issues, *guaranteed* to keep everybody in my company informed about the hottest computer market. SEND NO MONEY NOW. We'll bill you later.

Name _____
Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Business Phone _____

Corporate Subscription Rates:

10 copies	\$ 269.55	10% discount
20 copies	\$ 509.15	15% discount
40 copies	\$ 958.40	20% discount
60 copies	\$1,347.75	25% discount
80 copies	\$1,677.20	30% discount
120 copies	\$2,336.10	35% discount

Or send your address via internet to huchting@nextworld.com.

B31103

NeXTWORLD

For Canada add \$15 (includes 7% GST tax). All other foreign orders must be pre-paid in U.S. funds only and add \$40 for airmail delivery or \$15 for surface mail delivery. DO NOT SEND CASH. Check or money order accepted. FAX: 1-615-377-0525 to charge Visa/MC.

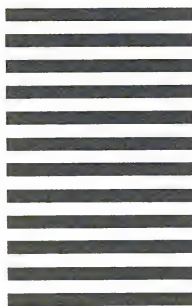
BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 237 BRENTWOOD, TN

POSTAGE WILL BE PAID BY ADDRESSEE

NeXTWORLD
SUBSCRIPTION DEPARTMENT
P.O. BOX 5038
BRENTWOOD, TN 37024-9817



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



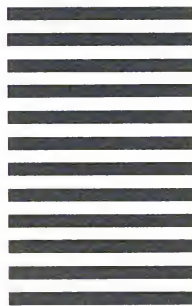
BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 237 BRENTWOOD, TN

POSTAGE WILL BE PAID BY ADDRESSEE

NeXTWORLD
SUBSCRIPTION DEPARTMENT
P.O. BOX 5038
BRENTWOOD, TN 37024-9817



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 237 BRENTWOOD, TN

POSTAGE WILL BE PAID BY ADDRESSEE

NeXTWORLD
SUBSCRIPTION DEPARTMENT
P.O. BOX 5038
BRENTWOOD, TN 37024-9817



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



What's Next?

Find out in
NeXTWORLD
the only magazine
dedicated to
NeXT computers.

NeXTWORLD

To the Source

ON THE

In the advocacy group, members have been fighting whether NeXT should release source code. "We don't stinkin' sources!" cry the postings, claiming that applications are actually able and have a better surviving an OS upgrade. Developers can't look in a bag of tricks and make documented features disappear. Others argue that, source, it's impossible to behavior of NeXT's only by trial and error.

All in all, it's a far early days of UNIX, couldn't get the operating anything except source. The good news, though, will now start shipping for the GNU compilers.

"Re: Another NS/ story . . . YES!!" is becoming more commonplace there are many complaints. NeXT isn't supporting hardware brands. One NEXTSTEP does seem is the "Cyrix CPU" equivalent a '386 floating-point co despite NeXT's claims that STEP FIP only runs on Intel '486 and Pentium. Another reader ("A Pen Pentium Sorry") found a Pentium daughterboard plugs the 64-bit process 32-bit '486 socket, then that the bastard child w Pentium's promised 100 formance. Better find a new motherboard, people.

Lastly, "Fat NewsG other GUI News readers rizes a problem that many heads are having with the Intel: NewsGrazer is available for NeXT's proprietary architecture. It has been that NeXT may release a sion or the source. That's now that Millennium nounced plans to market grazer Pro. ♦

by SIMSON L. GAI

To the Source

ON THE NET

In the advocacy group, programmers have been fighting about whether NeXT should license its source code. "We don't need no stinkin' sources!" cry hundreds of postings, claiming that third-party applications are actually more reliable and have a better chance of surviving an OS upgrade if clever developers can't look inside NeXT's bag of tricks and make use of undocumented features that might disappear. Others argue that, without source, it's impossible to verify the behavior of NeXT's objects except by trial and error.

All in all, it's a far cry from the early days of UNIX, when you couldn't get the operating system in anything except source-code form. The good news, though, is that NeXT will now start shipping source code for the GNU compilers.

"Re: Another NS/FIP success story . . . YES!!" is beginning to become more commonplace, although there are many complaints that NeXT isn't supporting enough hardware brands. One thing that NEXTSTEP does seem to support is the "Cyrux CPU" equipped with a '386 floating-point coprocessor, despite NeXT's claims that NEXTSTEP FIP only runs on genuine Intel '486 and Pentium processors. Another reader ("A Pentium Story, Pentium Sorry") found a source for a Pentium daughterboard, which plugs the 64-bit processor into a 32-bit '486 socket, then complained that the bastard child wouldn't give Pentium's promised 100 MIPS performance. Better find a source for a new motherboard, people advised.

Lastly, "Fat NewsGrazer or other GUI News readers?" summarizes a problem that many net-heads are having with the move to Intel: NewsGrazer is available only for NeXT's proprietary Motorola architecture. It has been rumored that NeXT may release an Intel version or the source. That's not likely, now that Millennium has announced plans to market Newsgrazer Pro. ♦

by SIMSON L. GARFINKEL



NEXTSTEP COMPATIBLE GUARANTEED TO PLEASE

\$2595

NextStep Workstation

☐ i486DX2/66 ☐ 16 MB RAM ☐ 340 MB HD
☐ EISA/VLB ☐ VLB CONTROLLER ☐ COLOR SVGA MONITOR

CASES

Diamond Series w/ 250 or 400Watt dual speed power supply w/ EMI Filters

MOTHERBOARD

NICE Technologies (made in America) featuring EISA & VLB Bus slots on the same quality board

KEYBOARDS

NMB 101 Enhanced
Keytronic 101 tactile
Focus 9001

VIDEO CARDS

ATI Ultra Pro VLB or EISA w/ 2MB VRAM
ATI EISA-bus video card w/ 2MB VRAM
STB Horizon VL-Bus 1MB video card
All other approved video cards

MEMORY

60ns SIMMs available in 4MB or 16MB modules, up to 256MB on board

CONTROLLERS

All approved SCSI and IDE controllers are offered including Adaptec, Buslogic, DPT and Promise Technologies.

NETWORK CARD OPTIONS

Intel EtherExpress 16
SMC Ethernet Elite

HARD DRIVES

Micropolis 1 Gig Fast SCSI-2 HD 10ms
Micropolis 560 MB Fast SCSI-2 HD 10ms
Seagate 520 MB SCSI-2 HD 12ms
Seagate 450 MB IDE HD 12ms
western Digital 340 MB SCSI-2 HD 12ms

MONITORS

14" Sceptre .28 NI Edge to Edge
15" Sceptre 1024x768 NI Low Radiation
17" Nanao T550i 1280x1024 NI .28
17" Mag 17F 1280x1024 NI .26
17" Sceptre 1280x1024 NI .26 Trinitron

MULTI MEDIA OPTIONS

Toshiba External CD ROM, 200ms
Texel SCSI-2 External CD ROM
Pro Audio 16 Sound card

ACCESSORIES

I/O card w/ 16C550 Uart
RAID 7-Chassis Case w/ 3 Shuttles
Modems
NextStep Software (Installed)

QUALITY

Above all, a system from G.E.C. is quality. Very competitive pricing is just a little bonus. Our customers tell us that the reason they buy from us is they know the machine will work, and that if something happens to go wrong, a professional technician is going to make it right in a hurry.

G.E.C. has set its standard by insisting on quality components. These include NMB keyboards (used by Compaq) TEAC floppy disk drives (the industry standard) and faster 60ns RAM. Our customers take note of the little things like the Diamond series cases, quiet power supplies, the use of fan-cooled heat sinks on the CPU.

EXPERIENCE

Try dealing with a company where every salesman knows NextStep standards and every technician has built, loaded and tested NextStep compatibles. Our technicians have received training in NextStep, work closely with Next and with our customers on compatibility, and are involved in Next users groups.

PRICE

G.E.C. has found only one way to lower your prices. Some of our competitors have done this, but our customers have asked us to refrain. Do we know where to buy cheaper components? Yes. We don't think you want a \$17 keyboard or a \$35 non-UL approved case. We believe in sticking with components that have proven themselves. We resist exchanging quality for price. We will offer you the best prices possible, while the quality remains a constant.

G·E·C

1901 E. University #300 Mesa, AZ 85203
Fax: (602) 834-1522 BBS (602) 834-6662

(800) 486-1500

Phone: (602) 834-1111

Circle 96 on reader service card



The NEXTSTEP Bandwagon

USER GROUP NEWS

USER GROUPS AROUND THE COUNTRY are settling into the new Intel-based world with meetings and programs designed to show off white hardware. Different groups are reacting in different ways. The sentiment in some remains diehard – offering support for black-hardware users – while others have become testing grounds for the bewildering array of new choices and are actively proselytizing PC user-group members to join the NEXTSTEP bandwagon.

Jamie O'Keefe of the Boston Computer Society (BCS) reports that Continental Computers and Software Services and Solutions came up from Connecticut to talk about the benefits and problems of the Intel PC architecture. Chris Lucas, president of Continental Computers, showed methods members could use to configure Intel PCs with the least amount of confusion.

Countering some of the conventional pessimistic wisdom about

drivers, Lucas commented that NeXT has written more drivers than most other UNIX vendors for Intel PCs. BCS members thought that the NEXTSTEP Configuration Tool was far easier to use than SCO or Interactive UNIX.

A number of users are moving to the Intel platform, especially corporations, but some are still sticking with NeXT's hardware. The BCS-NeXT group plans to work with the BCS IBM PC group to inform people about the power of NEXTSTEP.

At the Ottawa (Canada) NeXT User Group, Hayward Lam reports that there is interest in Intel hardware among users, but, in general, people are still in love with their black hardware. At a recent meeting, however, a local VAR announced that it had completed a \$500,000 NEXTSTEP-for-Intel deal with Transport Canada. Included in the deal are little black switch boxes that the VAR, com-

puterActive, makes to connect to a cordless headset. Users will be able to use it for TV signals, phone, and Simon Says. Users were impressed by the major improvement in noise reduction and liked the idea of walking around and talking on the phone or doing work with Simon Says.

The Oregon State University Group has had a training session in the last few months. An informal survey of attendees revealed that most of its members are sticking with black hardware for the time being. "There has not been any form of ground swell of new Intel converts. We have an ongoing stream of students who are looking at NEXTSTEP for their PCs at home, but it is not a big group yet. So I would say that interest has been steady and is not growing much at all," says John Sechrest.

From Rohit Khare and Walt Duflock, we hear that SCan, the Southern California NeXT User Group, recently invited Workstation 2000's Tim Finnegan to come and demo the Intel GX, which members agreed is the best-integrated solution for NS/FIP shipping

today. Somewhat surprisingly, there were few "horror stories" with installing NS onto a wide variety of generic hardware configurations.

Walt has some tips for other user groups: "Getting machines to show at meetings has always been an issue. There seem to be two sources of white hardware for user groups: hardware vendors, like Workstation 2000; and companies that have Intel boxes for development. The best way to get a machine is to call and ask. Most vendors and companies are happy to lend a machine and hand out some literature."

Also be sure to remember to confirm with the demonstrators which version of NEXTSTEP they require and what hardware. One final thought: always bring extra power strips. The new machines often seem to require a lot more plugs than the old black hardware, and outlets can be hard to come by when you need them. ♦

by DAN LAVIN

Workstation 2000

Your Source for the PROFESSIONAL/ GX Workstation

Pre-loaded
and
configured
systems
based on
66mhz
Intel'486™ DX2™



NeXTSTEP
GOLD
Authorized
Dealer

#1 in Quality

Standard Systems for the NeXTSTEP Community

619-723-4827 sales / support 619-723-4392 fax

Circle 31 on reader service card

Rosebase™

Relational Database Server for NEXTSTEP

Features: Joins, Views, Aggregates, Subqueries, Scalar and date functions, Data manipulation, Multiple indicies, Declarative referential integrity, Query optimization.

Data types: TINYINT, SMALLINT, INTEGER, DOUBLE PRECISION, REAL, FLOAT, DECIMAL, NUMERIC, CHAR, VARCHAR, DATE, TIME, TIMESTAMP, BIT, VARBIT, BYTE, VARBYTE.

Includes: Server, ObjC client library, DBKit adaptor, Query tool (w/ source), Example apps (w/ source).



See us at Comdex – Booth S-344

Blue Rose Systems

800-821-ROSE
Email: rosebase@BlueRose.com
Phone: 415-949-2426 Fax: 415-941-7129

Circle 81 on reader service card

surprisingly, there
stories" with
a wide variety of
configurations.
tips for other
tting machines to
has always been
em to be two
hardware for user
e vendors, like
0; and companies
oxes for develop-
ray to get a ma-
d ask. Most ven-
ies are happy to
nd hand out some

to remember to
demonstrators
NEXTSTEP they
hardware. One
ways bring extra
e new machines
quire a lot more
d black hardware,
e hard to come by
hem. ♦

FIN


TM
Se
NEXTSTEP

series, Scalar
ltiple indicies,
imization.
EGER,
DECIMAL,
TIME,
RBYTE.
Kit adaptor,
/ source).

Booth S-344

stems

7129

Within this unassuming
beige exterior beats
the heart of the original
 machine.



Judging from the outside, you'd never expect it to be such a screamer. But when you power it up, hold on. Presenting the Epson NX for NEXTSTEPTM with a scorching Intel[®] DX2/66MHz microprocessor. The NX's revolutionary Wingine[®] video technology displays NEXTSTEP applications significantly faster than other systems. The NX is even faster right out of the box, because NEXTSTEP is pre-loaded on the hard disk. Just unpack, plug in and play.

Sit down with your NX and everything feels very familiar. It feels *right*, with none of the tearing or submarining of other systems. It even achieves the native resolution of the original NeXT[™] system. No question about it, the Epson NX operates just like a NeXT machine, only better. Call the Epson Connection[™] at 1-800-BUY-EPSON for information about the Epson computer that runs NEXTSTEP even better than the original.

EPSON[®]



Wingine is a registered trademark of UHS[®] and Technologies. All company and/or product names are trademarks and/or registered trademarks of the respective manufacturers. Epson displays the word "Epson" as a registered trademark of Seiko Epson Corp. ©1993 Epson America, Inc. 2077 Midway Ave., Irvine, CA 92614. For dealer referral, call 800-BUY-EPSON (800-899-3776). In Canada, call 800-GO-EPSON. Screened screen only.



TAKE THE NEXTSTEP WITH WORDPERFECT.

WORDPERFECT 1.0.1 IS NOW AVAILABLE FOR INTEL PROCESSORS RUNNING NEXTSTEP.

If you're moving up to the power of the world's only object-oriented system software, take one more step to the world's most popular word processor. WordPerfect® for NEXTSTEP brings all of the power and convenience of WordPerfect to the Intel platform running NEXTSTEP, combined with features such as drag-and-drop editing and integrated on-line help. You'll work more productively because WordPerfect capitalizes on the NEXTSTEP environment, including true WYSIWYG screen displays and support for PostScript and other fonts. Of course, you also get WordPerfect's legendary customer service and support. For more information, call WordPerfect Corporation at (800) 526-3851. We'll show you why WordPerfect should be your next step.

WordPerfect®

WordPerfect is a registered trademark of WordPerfect Corporation within the United States and other countries. All other brand and product names are trademarks or registered trademarks of their respective companies. © WordPerfect Corporation 1993.

NEXTWORLD



NEW
IN BRIEF

R&A, a small Netherland consulting firm, has developed a partial System V shared library and semaphore-emulation system that runs on top of NEXTSTEP. Software is available at \$50 for object code and for source code, with free upgrades promised when the emulation library is finalized. R&A: 31/70/323-0851; gerna.indiv.nluug.nl.

Objective Technologies has unveiled a new incentive program for its 11 software offerings. Rather than offering discounts based on volume purchases, it will now offer a 5-percent cut on orders over \$1000, a 1-percent cut on every additional \$1000, up to a maximum 20-percent discount for \$10,000 purchased. OTI: 212/227-6100; info@object.com.

Hot Technologies has unveiled new functionality and pricing for its BarCodeKit. The collection of 13 InterfaceBuilder palettes contains an improved API, a new on-line tutorial, better source-code examples, and performance improvements. Palettes can be purchased separately starting at \$99; if purchased as a kit for \$2795, it includes the source code for a Bar-a-Coda application. Hot Technologies: 617/252-0000; Robert_La_Ferla@hotmail.com.

Schema Research Corporation announced in August a version of its SchemaE CASE-database design and management tool for Oracle. The tool, which reverse-engineers the database every work session, was scheduled to be shown at the Oracle International User Group meeting in Orlando, Florida, at the end of September. Schema Research: 415/368-8477; Products@LSC.com.

Two new books of interest to NEXTSTEPers came out of the dog days of summer. O'Reilly and Associates published *Connect-* [CONTINUED ON PAGE

NEWS
IN BRIEF

R&A, a small Netherlands-based consulting firm, has developed a partial System V shared-memory and semaphore-emulation system that runs on top of NEXTSTEP. Software is priced at \$50 for object code and \$500 for source code, with free upgrades promised when the full emulation library is finished. R&A: 31/70/323-0851; gerben@rma.indiv.nluug.nl.

Objective Technologies has launched a new incentive program for its 11 software offerings. Rather than offering discounts based on volume purchases, OTI will now offer a 5-percent price cut on orders over \$1000, with 1-percent cuts on every additional \$1000, up to a maximum 20-percent discount for \$16,000 purchased. OTI: 212/227-6767; info@object.com.

Hot Technologies has unveiled new functionality and pricing for its BarCodeKit. The collection of 13 InterfaceBuilder palettes contains an improved API, a new on-line tutorial, better source-code examples, and performance improvements. Palettes can be purchased separately starting at \$99; if purchased as a kit for \$2795, Hot includes the source code for its Bar-a-Coda application. Hot Technologies: 617/252-0088; Robert_La_Ferla@hot.com.

Schema Research Corporation announced in August a version of its SchemaE CASE-database design and management tool for Oracle. The tool, which reverse-engineers the database every work session, was scheduled to be shown at the Oracle International User Group meeting in Orlando, Florida, at the end of September. Schema Research: 415/368-8477; Products@LSC.com.

Two new books of interest to NEXTSTEPers came out of the dog days of summer. O'Reilly and Associates published *Connect-* [CONTINUED ON PAGE 22]

Factory going, going, gone

by DAN LAVIN

Fremont, CA — Having failed to find a buyer to take over its factory intact, NeXT last month sold it off piece by piece in a public auction. The sale, conducted by high-tech liquidators Ross-Dove, included factory equipment and fixtures, office furniture, and finished NeXT computers and peripherals.

According to Dominique Trempont, NeXT's CFO, the auction raised \$400,000, a small fraction of the money invested in the



Bidders examined more than 700 lots of equipment before the gavel came down on NeXT's factory auction.

facility. "That was basically fair value for the assets we sold," Trempont said, noting that much of the prime factory equipment and technology had been sold separately.

NeXT [SEE AUCTION, PAGE 22]

Top accounting firm picks NeXT objects

by DAN LAVIN

Palo Alto — NeXT gained a key business partner when Big Eight accounting firm KPMG Peat Marwick announced in September that it will begin offering a wide array of NEXTSTEP services. Among other projects, the firm plans to develop reusable object libraries for use in telecommunications, financial services, and health care.

"Object-oriented development is changing the way leading systems-consulting firms will develop software for their key customers. It allows developers to build reusable applications and reusable vertical-market components. We believe that NEXTSTEP provides us with an excellent opportunity to provide our customers with the benefits of object orientation," said Roger Siboni, KPMG's national director of information and communications.

The partnership differs from other integrator relationships through its sheer size and market

presence. KPMG is a \$6 billion accounting and professional-services firm with 800 offices in 125 countries and has contracts with 460 of the *Fortune 500* companies. Though not directly comparable, the next largest integrator that

[SEE PEAT MARWICK, PAGE 20]

Developer meet set for DC

by DAN LAVIN

Redwood City — NeXT and Digital Consulting have announced the 1994 East Coast NEXTSTEP Developer Conference to be held January 24-26, 1994, at the Sheraton Washington in Washington, DC. The event is strictly for developer training and not a full-scale trade show like NeXTWORLD Expo, still planned for mid-1994 in San Francisco.

"We found that there was so much demand for information about object-oriented technology

Jobs, in Europe, hints at product futures

by ELIZABETH HEICHLER

London — NeXT CEO Steve Jobs revealed pieces of NeXT's emerging product road map during two September stops in Europe.

At the German Unix Users Group (GUUG) meeting in Wiesbaden, Germany, Jobs drew a crowd that overflowed into adjoining halls for his keynote speech. He then flew on to London, where about 100 information-technology executives attended his invitation-only presentation at the Savoy Hotel.

Among the highlights:

- NEXTime, video-playback software with built-in compression and decompression, will be ready for beta testing early next year and is scheduled for a spring 1994 ship date.
- DBKit 2, a rewrite of NeXT's database-development environment, will ship next summer, according to Jobs. "It's quite remarkable, and another big leap forward in being able to construct client-server applications against SQL databases," Jobs said.

• The [SEE JOBS, PAGE 22]

Two developers bow out

by DAN RUBY

Unable to adjust to NeXT's shift in market focus to custom applications, RightBrain Software and Appsoft put their software titles on the block and prepared to cease operations.

In the first of several expected transactions, Anderson Financial Systems signed a letter of intent to acquire RightBrain's PasteUp page-layout program. RightBrain President Glenn Reid also



Greg Anderson: "The key to success in shrink-wrapped software is providing links to custom apps."

said that Portola Valley, California-based Trilithon Software will acquire several RightBrain utilities, while another buyer is set to acquire the as-yet unreleased ExactlyWrite word processor.

At press time, Appsoft announced that it will cease sales and support of its NEXTSTEP applications by October 15, 1993. To clear inventory, the company cut prices on Appsoft Draw, Image, and WriteNow by up to 90 percent.

Acknowledging that it was a "hard decision" to close RightBrain, Reid said that "the market has not improved adequately since NeXTWORLD Expo and shows no signs of doing so in the end-user segment. It appears to me that NeXT is not interested in the individual user's dollar, and has no plans for marketing to them."

"It is sad to see companies leave a plat-

that it made sense to have complementary conferences on each coast," said Karen Steele, NeXT's director of marketing communications.

Monday's schedule features four different, optional half-day sessions that attendees register for individually. The other two days feature the main body of the conference, with four program tracks, a lab, and general sessions.

The four tracks are: NeXT in the Marketplace, a management overview of technical services and develop-

[SEE CONFERENCE, PAGE 20]

NCR adapter opens world of powerful processing

by SIMSON L. GARFINKEL

Los Angeles – NEXTSTEP can now communicate directly with some of the world's largest parallel multiprocessor computers, thanks to a new adapter that connects NeXT's DBKit with the Teradata relational database system.

The adapter, developed by the NCR Professional Services Division, makes it easier for developers to create graphical object-oriented applications that access massive databases stored on Teradata mainframes.

The adapter requires an NCR DBC/1012 computer with a LAN connection or an NCR System 3600 computer with Teradata database support.

The DBC/1012 and System 3600 are massively parallel supercomputers that can accommodate over 100 central processing units and more than a terabyte of on-line storage.

The systems are built specifically for running large, fault-tolerant database systems.

"I've been a beta tester [of the DBKit adapter] for over a year," said Michael Koved, manager of finance at Bank of America's acqui-

sition analysis department in San Francisco. "Overall, it's great. It's robust and provides tremendous functionality. It's a tool for me to get at credible information and use very powerful tools on NEXTSTEP."

The adapter is available for NEXTSTEP running on both Motorola and Intel-based hardware, including NCR's System 3333 computer, and requires NEXTSTEP Release 3.0 or greater and Teradata database software release 4.1.0 or greater, said Juan Hernandez, a spokesperson for NCR.

In addition to the DBKit adapter, NCR also provides users with a Teradata Call Level Interface library and "include" files, for developers who wish to bypass NeXT's DBKit and directly access data stored on their supercomputer, as well as full on-line documentation.

The adapter is priced at \$995 for a single-user license, \$5000 for a ten-user license, and \$25,000 for an enterprisewide license. A demo version is also available.

NCR Corporation: 310/524-7241; Juan.Hernandez@ElSegundoCA.NCR.COM. ♦

Sarrus upgrades apps

Foster City, CA – In shipping multiple-architecture versions of its Pencil Me In scheduling program and SBook contact manager, groupware publisher Sarrus Software has added features to more tightly integrate the two programs.

Users can drag contact information out of SBook 3.1 into Pencil Me In 1.1 calendars or action lists. They may also look up SBook data from Pencil Me In or other applications via the Services menu. "The new versions let users share calendar and content files transparently, regardless of the kind of computer their co-workers use," said Andrew Turk, Sarrus president.

Pencil Me In also gains new data-export functions for using calendar data in time-and-billing programs or producing reports in external word processors, spreadsheets, and database programs. Its print function now recognizes



Entries can be dragged and dropped between upgraded Pencil Me In and SBook.

date ranges. SBook's envelope printing functions were enhanced, the company said.

Both programs run unmodified on Intel or Motorola systems. Pencil Me In 1.1 is priced at \$299, while SBook 3.1 is \$199. Current owners can upgrade through November 30 at no charge.

Separately, Sarrus announced a \$249 promotional bundle including both programs for members of NEXTSTEP user groups. Individual members may buy only one bundle at the special price.

Sarrus: 415/345-8950, 800/995-1963; info@sarrus.com. ♦

Dow Jones news reader

by ELIOT BERGSON

Allston, MA – Putting a new face on one of the world's most important news sources, Zhivago Software began shipping NewsMan on September 30.

Users now have a NEXTSTEP interface for 13 Dow Jones databases, which provide the latest news from the *Wall Street Journal*; industrial and government news; bond, option, stock, and Treasury quotes; mutual-fund performances; and Standard & Poor's earnings reports, among other information.

NewsMan feeds each database

to a dedicated window and processes data requests in threads, which allows users to continue working while data is downloaded. The software also provides an API, so programmers can develop other applications that access NewsMan's functionality. Trading houses, for example, can use NewsMan to retrieve historical or current quotes that feed directly into their custom applications.

NewsMan sells for \$495 for a



NewsMan gives users windows into the various worlds of the Dow Jones universe.

single user; the company is offering a 20-percent discount with a coupon, until February 1994. Educational pricing is \$149 for each student with valid ID.

Zhivago Software: 617/499-1605; karl@oec.com. ♦

Cub'x offers API

Paris – Cub'x Systèmes has announced an API (application programming interface) for its intuitiv'3D modeling and rendering program. With the API, a developer can create 3-D modeling systems with elements like complex automated shaders and lights.

The API is available free of charge but requires ownership of the full intuitiv' 3D package to be useful.

The company also announced \$150 academic pricing.



With a new API, programmers can add 3-D functionality from intuitiv'3d into their apps.

Cub'x Systèmes can be reached at 33/1/47.08.74.40; intuitiv@cub.com. ♦

New LaserJet driver

by SIMSON L. GARFINKEL

Zurich, Switzerland – Uptime Object Factory, a local NEXTSTEP developer, has released the first version of its TCPprd printer driver, which allows NEXTSTEP-based computers to print on specially equipped HP LaserJet IV printers via an Ethernet network.

The driver makes it possible for owners of black hardware to print directly on high-resolution LaserJet IV printers at higher speeds than are possible through the NeXT serial port. The driver also allows white hardware to send data to the printer via the Ethernet interface, without the need of a parallel interface or special printer cable.

Uptime's driver requires a LaserJet IV printer equipped with both an HP JetDirect Interface card and a PostScript option.

Uptime has placed a fully func-

tional version of the driver on the FTP servers sonata.cc.purdue.edu and cs.orst.edu in the /demos directory. The driver is priced at 90 Swiss francs (approximately \$60 at press-time exchange rates).

Uptime Object Factory: Baumackerstrasse 46, 8050 Zurich, 41/1/313-0607; info@uptime.ch. ♦

Kit models systems

Sandy, Utah – Process engineers can now use an object palette from Doberman Systems to simulate engineering systems.

According to the company, the NEXTSTEP objects allow simulations to be built directly from a block-diagram representation of the system, unlike traditional methods, in which simulations are programmed procedurally from

derived equations.

The \$399 Simulation Kit includes seven primary Objective-C classes and 15 example systems, including full source code. Typical users include mechanical, electrical, thermodynamic, and chemical engineers, the company said.

Doberman Systems: 2027 East Ashley Ridge Rd., Sandy, Utah 84092. 801/944-4329. ♦

NS/FIP re on host c

by SIMSON L. GARFINKEL

Contrary to NeXT's official software-compatibility guidelines, a number of users are succeeding in getting NEXTSTEP to run on Intel Processors to run on 486 clones, including the 486DLC-33 CPU, the SLC2-66, and an AMD 40. Most of the systems use an Intel '387 as a coprocessor to provide floating-point support.

"NeXT has never seen this," said Ian Stewart, an engineer who has also heard rumors. "I asked an expert recently and he mentioned a floating-point unit is disabled and may cause problems."

GS, Visual character

by ELIOT BERGSON

Users who have been waiting for performance improvements in character-recognition software may be big winners, as two new products bring award-winning technology to NEXTSTEP Operating System.

While Kentfield, California-based GS Corporation is setting new standards with READ, an OCR package on the Recognition Tool ExpertVision, Pittsburgh-based Understanding Systems is relying on the Mac and Windows favorite, Caere's OmniPage. GS's Express! line of products, including eXTRAREAD, which ships in September, relies on an algorithm that looks at differences between letters that have been scanned in from an original. If the software recognizes a letter as being round, for example, it can decide it is an "o" rather than a "c" by the fact that the letter is not a closed circle.

According to the company, previous OCR packages have failed on comparisons between a number of letterforms for a table, but software-based algorithms makes mistakes the letter doesn't match the original. VISUS' products also include President Tom Thibadeau to as "intelligent character recognition," rather than "OCR" based on pattern recognition rather than trying to match entries.

ler



NewsMan gives users windows into the various worlds of the Dow Jones universe.

company is offering a 25 percent discount until February 1994. Pricing is \$149 for a copy with valid ID. Software: 617/499-ec.com. ♦

SmartSoft time

SmartSoft's For NEXTSTEP is designed to know exactly what is, SmartSoft has a Synchronicity 2.1.1. It is a free service from the National Institute of Standards and Technology. Synchronicity is a Preferred module that can be used to call the Instinct in Bolder, Colorado a NEXTSTEP system the nation's official feature in version 2.1.1. It is a program to slowly speed up the computer's matches the actual than abruptly reset the computer's clock (which has problems with NFS work-based proto-

Synchronicity is available for free, via the Electronic, and on the NEXT archives, said Albert company's president. \$30 per user license. 414/964-8864; smartnixon.com. ♦

Systems

Simulations. Simulation Kit in primary Objective-15 example systems, source code. Typing, mechanical, electronic, and chemical, the company said. Systems: 2027 Ridge Rd., Sandy, 801/944-4329. ♦

NS/FIP reported running on host of non-Intel chips

by SIMSON L. GARFINKEL

Contrary to NeXT's official hardware-compatibility guide, a growing number of users are reporting success in getting NEXTSTEP for Intel Processors to run on non-Intel '486 clones, including the Cyrix 486DLC-33 CPU, the IBM SLC2-66, and an AMD 486DX-40. Most of the systems required an Intel '387 as a coprocessor to provide floating-point support.

"NeXT has never seen it running," said Ian Stewart, a NeXT engineer who has also heard the rumors. "I asked an engineer recently and he mentioned that the floating-point unit is different and may cause problems — what

exactly, we don't know."

Stewart said that NeXT has also heard rumors of NEXTSTEP running on IBM's new 99MHz '486-clone, which has reportedly been released in Canada.

"NeXT has not seen either of these working, so NeXT still claims Intel support only," Stewart said.

If the reports are accurate and NEXTSTEP can run reliably on non-Intel '486 microprocessors, it would open up new possibilities for NEXTSTEP with low-cost desktop and laptop systems, where Intel's competitors offer chips with price/performance characteristics not offered by Intel, and at substantially lower prices. ♦

GS, Visus offer apps for character recognition

by ELIOT BERGSON

Users who have been waiting for performance improvements in character-recognition software may be big winners, as two developers bring award-winning technology to NEXTSTEP OCR software.

While Kentfield, California-based GS Corporation is hoping to set new standards with eXTRAREAD, an OCR package based on the Recognition Toolkit from ExperVision, Pittsburgh-based Visual Understanding Systems (VISUS) is relying on the Mac and Windows favorite, Caere's OmniPage, for its OCR Express! line of products.

eXTRAREAD, which began shipping in September, relies on an algorithm that looks at the differences between letters that have been scanned in from an image. If the software recognizes a letter as being round, for example, it can decide it is an "o" rather than a "c" by the fact that the letter is a closed circle.

According to the company, previous OCR packages have relied on comparisons between a finite number of letterforms from a table, but software based on letterform lists makes mistakes if the letter doesn't match exactly.

VISUS' products also use what President Tom Thibadeau refers to as "intelligent character recognition," rather than "OCR," relying on pattern recognition rather than trying to match entries on a

reference table.

VISUS is selling OCR Express! as a \$795 API, allowing application designers to incorporate character recognition into their software; as a stand-alone product for \$499; or together with VISUS Paper Sight, the company's image-management software, for \$499.

With Paper Sight, users are able to scan, index, and perform batch processing of images into editable text without supervision.

Educational and reseller pricing is available.

eXTRAREAD will provide formatted text for the user: Fonts are mapped as closely as possible to typefaces present in the system and include tabs, spacing, and approximate size, said Joe Bresler, marketing manager for GS Corporation.

The software can be used as a stand-alone application or accessed in other software via the Services menu. It is currently offered in Intel-only or Motorola-only versions.

eXTRAREAD is priced at \$299 for Version 1.0; Version 2.0 will include a scanner driver and have the capabilities for batch processing and fax recognition. According to the company, the upgrade is scheduled to be priced at \$699, but registered 1.0 users will be able to upgrade for \$199.

GS Corporation: 415/257-4700; info@goldleaf.com. VISUS: 412/488-3600; info@visus.com. ♦

Val Verde rounds out its system

by ELIOT BERGSON

Perris, CA — Just as officials put the finishing touches on a two-year effort to bring NEXTSTEP to every wired classroom in the Val Verde Unified School District, they began to gear up for a fight to keep the technology in place.

The entire five-seat school board is up for re-election this November, and opponents of the K-12 district's computer solution could shut down the system if they gain a majority on the new board. Val Verde is a relatively new district and is growing rapidly, explained District Superintendent Leona Williams, so the current board has seen the wisdom of putting a strong technology

infrastructure in place now rather than in the future.

There are people who think "we're spending too much [on technology]," said Darrell Lynn, director for MIS and technology. "But there's too much at stake here. There's a national consensus emerging about the importance of technology in schools."

Lynn cited a recent University of Riverside survey that listed "computers and learning" as the top concern of parents, community, and business leaders in the



From day one, students in Val Verde Unified are exposed to NS.

school district's area.

To get the message out about Val Verde's accomplishments, Lynn has spoken before the Institute of Electrical and Electronics Engineers in Washington, DC, and on panels at NeXTWORLD Expo in May.

But the district's strongest message will come from its successes. Every classroom that is wired with the FDDI (fiber distributed data interface) backbone to the district's T1 Ethernet system now has at least one machine. The district's custom School Information System, to manage all grades, attendance records, transcripts, and bus scheduling, is under development. And user accounts for all students were due to come on-line by year end. "The students will be up and Internet surfing in no time," Lynn said.

Rancho Verde high school has an art lab under construction, with five NeXTstations outputting work via the Internet direct to service bureaus' Linotronic imagesetters, as well as the district's second Mathematica classroom. And the high school will soon offer NEXTSTEP programming classes. ♦

WilTel turns on switches

by ELIOT BERGSON

Tulsa, OK — Williams Telecommunications, a private-line telecommunications carrier that designed its Asynchronous Transfer Mode network over the past two years using NEXTSTEP, was scheduled to come on-line with commercial services at the end of October. The network was tested live on the Interop show floor in August by Convex Computer Corporation, of Richardson, Texas, WilTel's first beta customer.

WilTel's Channel Networking Service (CNS) will provide customers with high-speed data capabilities over the nation's fourth-largest fiber-optic network, said Bill Wilson, vice-president of strategic planning for the company. The CNS will allow WilTel customers to centralize remote data storage, distribute

data processing, and perform host-to-host and host-to-peripheral communications.

The heart of WilTel's system is eight switches developed by NEC, which will be deployed in Los Angeles, Phoenix, Denver, Dallas, Chicago, Atlanta, New York, and Washington, DC.

The company uses its NEXTSTEP-designed Network Management System to control user connections, report statistics, manage throughput, and launch circuit tests. Customers use a Customer Network Management System to produce customized reports, submit and track trouble tickets, and monitor traffic.

In addition, WilTel has also expanded its private-line system by signing a deal with FONOROLA, a Montreal-based reseller, to offer users connectivity options with major Canadian cities. The company said it also plans to move into the European and Pacific Rim markets. ♦



ScanKit adds Fujitsu support

Paris — Elysia's ScanKit now supports the ten-page-per-minute, 256-gray-level Fujitsu ScanPartner 10, in addition to other Fujitsu and Ricoh models.

ScanKit permits developers to easily integrate image scanning in custom applications, according to the company, a VAR specializing

in forms-management applications.

The kit is available now for Motorola systems at \$995; run-time licenses for each supported scanner are priced separately. An Intel version is promised by the end of 1993.

Elysia: 33/1/47.49.61.96; luis@elysia.com. ♦

Mesa adapter

Beaconsfield, England — Users of Athena Design's Mesa now have access to another industry-leading database engine, thanks to P&L Systems.

The company, which is Athena's distributor in the United Kingdom, is due this fall to ship its Oracle Adaptor for Mesa, which allows users to search and update Oracle databases and return data directly into Mesa spreadsheets. This matches the reporting capabilities for Sybase databases already present in the software, according to Paul Lynch, company founder.

The adapter is \$350 per licensed concurrent user; site and corporate licenses are available.

P&L Systems: 44/494/67.15.01; orders@seer.demon.co.uk. ♦

UNIX vendors seek common API

by SIMSON L. GARFINKEL

The industry alliance that promises to unify the UNIX world released in September its first technical document—a set of standards that define a unified programmer's API across all versions of UNIX—that will potentially complicate NeXT's moves to follow industry standards.

"We are in favor of the UNIX community coming together and creating standard APIs," said Karen Logsdon, a NeXT spokeswoman. "As they are defined, we will work to make NEXTSTEP support those standards," she added.

The standard, developed by a

team of engineers from such UNIX giants as Digital Equipment Corporation, HP, IBM, Sun Microsystems, and Novell's UNIX Systems Group, is designed to let developers write a single version of application programs that can then be able to run on different hardware and software platforms by simply recompiling and relinking.

Versions of UNIX featuring the so-called Common OS API should appear in mid-1994, the vendors said. Adding the common API won't be a big job for most, since many aspects of the API are already standard features in most versions of the UNIX operating system, including sockets, System V-based

signals, conformance to POSIX, and the X Window system.

Nevertheless, the reliance upon X Windows is likely to complicate matters for NeXT, which does not support the system under NEXTSTEP unless the end user purchases one of several third-party products. Furthermore, NeXT's absence from the standard-setting committees means that NeXT will not formally have access to upcoming developments in the standards until they are publicly announced. ♦

Continental bundles development tools

by DAN RUBY

Newington, CT—Continental Computer Systems will differentiate its NEXTSTEP computers by bundling networking and development tools from Software Services and Solutions (SS&S) and SofDesign.

The bundle, designated as Continental's Connect Kit, includes SS&S Networking Tools, CASE

Tools, and ObjectWare, as well as the SofDesign QuickBase SQL server.

Intel hardware suppliers face heavy competition in the market for NEXTSTEP buyers, and several have pursued bundling deals with third-party software developers to enhance and differentiate their offerings.

With this announcement, Continental has staked out a position in the market for development systems and NEXTSTEP servers.

"If you are impressed by the rapid development cycle under NEXTSTEP, you will be amazed at how fast mission-critical applications come together on a Connect Kit-configured system," said Rodney Bouchard, director of business development at Continental.

The bundle is well suited for such information-management tasks as document-revision histories, according to Robert Masterson, vice-president of SS&S, a NeXT VAR with experience at sites such as the New Haven, Connecticut, police department.

Continental markets EISA and ISA 486- and Pentium-based NEXTSTEP systems using VL-bus ATI graphics.

Continental Computer Systems can be reached at 203/953-8649 or 800/776-8649. ♦

Ciusa targets low-end WP

by ELIOT BERGSON

Minneapolis, MN—Ciusa is looking for an early lead in the low-cost word-processing market by preparing to introduce its \$149 WriteStep product in early December.

"We're unsure of the status of RightBrain, but we think that, featurewise, we'll be above the board," said Gerard Schwarz, Ciusa president, referring to the uncertainty at press time about Palo Alto, California-based RightBrain Software's NEXTSTEP

products.

RightBrain reportedly sold its PasteUp page-layout program to Anderson Financial Systems, while the source code for ExactlyWrite, a low-cost word processor, was also up for sale.

WriteStep is designed with an easy-to-navigate tool bar that encapsulates the 36 most often used commands in word processing, but Schwarz said that the on-line English Writing Guide and Rhyme Dictionary, along with other references, will differentiate Ciusa's offering from other company's.

The fat-binary software was in alpha release at press time.

Ciusa: 612/822-1604; g_schwarz.ciusa.com. ♦

Peat Marwick

[FROM PAGE 17]

has a strategic relationship with NeXT is Systemhouse, which has sales around \$700 million, according to sources.

KPMG's plans for object libraries differ from current ObjectWare providers, according to NeXT. KPMG will be among the first to focus on specialized object kits for vertical markets, rather than general application-development object sets.

NeXT and KPMG Peat Marwick will work together both to

create new business and expand NEXTSTEP's presence in existing accounts.

"KMPG Peat Marwick has a strong presence in our target markets, including telecommunications and financial services. We will begin working together with them immediately on customer accounts that we have in common in these markets," said Bill Wesemann, VP of North American sales.

As the first phase of the deal, KPMG began training engineers on NEXTSTEP in September. ♦

Conference

[FROM PAGE 17]

ment opportunities offered with NEXTSTEP; The Art of Design, which focuses object, application, and system design using the object-oriented paradigm; A Closer Look, which looks at NEXTSTEP object kits and distributed objects; and Hardware is Inevitable, a look at hardware-purchasing, administration, and configuration issues.

The sessions on Monday cost \$160 each, in advance, and \$200

each on-site. The two-day conference costs \$545 in advance and \$595 at the door. Registration and information is available from DCI at 508/470 3880 or 800/767-2336.

Microsoft is planning an NT developers gathering in Washington six weeks prior to NeXT's event. "This provides developers a better alternative for object-oriented education in DC this spring," Steele said. ♦

ELECTRONIC ALTERNATIVE



As the Sleuth discovered last month, you sometimes have to dig deep to find a wide variety of third-party software for

NEXTSTEP for Intel. With this in mind, the Sleuth turned to a novel means of software distribution, the *Electronic App-Wrapper*, published by Seattle's Paget Press. The EAW offers over 100 shipping NEXTSTEP-for-Intel applications, along with 250 for Motorola hardware.

Paget's electronic order form automates many of the details of ordering software off the disk, filling in prices and calculating shipping charges and taxes. The day after sending it off, we received confirmation of our order in our morning e-mail.

The try-before-you-buy approach is both the most eclectic

and most practical example of direct marketing the Sleuth has yet seen. Paget has achieved the seemingly impossible by making direct marketing a fun experience. You can read product brochures prepared by the individual companies right on-line, view screen shots, and run demonstration versions of the apps. Many can be unlocked and used immediately, simply by supplying your credit-card number to Paget Press by e-mail, fax, or telephone (all messages are encrypted to ensure security). Manuals are delivered the old-fashioned way, by U.S. mail.

To run EAW, you need a computer running NEXTSTEP 3.0 or 3.1 with screen resolutions of 1024-by-768 or higher and a compatible CD-ROM drive.

Paget Press: 206/448-0845, 206/448-2350 fax; eaw@paget.com.

Each month, the Sleuth will look at a different aspect of NEXTSTEP marketing.

Translating in conText

by ELIOT BERGSON

Kaiserslautern, Germany—As international business communication becomes more commonplace, users can turn to conText, a new tool for translating and spell checking correspondence and technical manuals.

The software, which shipped September 30 from Lots Schneiders Kraft GbR, is based on English, German, and French dictionaries designed around word stems. As users type, conText will spell check and translate text based

on the word stems and the context in which they are used. The program also offers macro definitions, Services support, and the ability to create personal dictionaries.

According to the company, other language dictionaries are under preparation.

The basic application, with one dictionary, costs \$930 (at press-time exchange rates). Users can also purchase language, spelling, and trade dictionaries.

Lotz Schneiders Kraft GbR: 49/631/109.91; 49/631/109.92 fax. ♦

B

Upgrade

by LEE SHERMAN

Redwood City—New prices for NEXTSTEP grades took effect October 1, signaling the end of a promotional period designed to hold on to existing customers while bringing new users into the fold as NeXT completes its transition.

"It was an incentive for our customers a chance to upgrade below market price," said Rick Jackson, director of development environment planning and marketing. "Now the price is in line with market value."

Release 3.1 upgrades jumped in price from \$99 for the developer version to \$75 to \$95 for the user version. Customers who upgrade before October 31 will receive a free upgrade to NEXTSTEP 3.2 when it is released.

End users of NeXT hardware can receive their upgrade directly from NeXT by calling

NeXT targets systems

by DAN LAVIN

Redwood City—Looking for more partners to help sell NEXTSTEP to corporate sites, NeXT has set up a special sales, training, and support effort around medium-sized systems integrators.

The new program, called Object Channel, "will serve integrators whose major thrust is consulting and development services and who will create demand for NEXTSTEP through their deployments," according to Bill Wesemann, NeXT's vice president of North American sales.

Object Channel partners include integrators and vendors who added resellers with sales in the \$5-\$20 million range. The qualifier is that the organization creates demand for NEXTSTEP through the other services they offer.

Integrators must apply for admittance into the program and then pay a \$7000 fee in return for a basket of services, including two copies each of NEXTSTEP developer and user versions, a two-week course and two telephone support courses, telephone support

Bundles tools

ObjectWare, as well as design QuickBase SQL

ware suppliers face competition in the market. NeXT buyers, and several bundled deals partly software development and differentiation.

is announcement, it has staked out a market for development and NEXTSTEP

are impressed by the development cycle under NeXT, you will be amazed by the mission-critical applications together on a configured system," said Richard, director of development at Conti-

de is well suited for nation-management development-revision history to Robert Mas-president of SS&S, a company with experience at the New Haven, Conn. police department. The market EISA and Pentium-based systems using VL-bus is. Contact Computer Systems reached at 203/953-0776-8649.

business and expand NeXT's presence in existing markets. Peat Marwick has a presence in our target markets for telecommunications services. We will be working together with them on customer accounts and in common in these markets. Bill Wesemann, an American sales. The first phase of the deal, an training engineers in September.

2. The two-day course is \$545 in advance and on door. Registration is available from 1/470 3880 or 800/

it is planning an NT gathering in Washington prior to NeXT's release provides developers alternative for object location in DC this week said.

Upgrade price rises as eval offer ends

by LEE SHERMAN

Redwood City - New price increases for NEXTSTEP 3.1 upgrades took effect October 1, signaling the end of a promotional period designed to hold onto existing customers while bringing new users into the fold as NeXT completes its transition.

"It was an incentive to give our customers a chance to upgrade below market prices," said Rick Jackson, director of development environment product marketing. "Now the pricing is in line with market value."

Release 3.1 upgrades have jumped in price from \$99 to \$495 for the developer version and from \$75 to \$95 for the user version. Customers who upgrade to 3.1 and register before October 31 will receive a free upgrade to NEXTSTEP 3.2 when it is released.

End users of NeXT hardware can receive their upgrades directly from NeXT by calling 800/

677-6398 or 800/848-6398.

The \$299 NEXTSTEP Evaluation Kit promotion ended on September 30. NeXT declined to provide sales results for the promotion, but sources close to the company said that about 4000 units were sold.

According to Marketing Communications Director Karen Steele, the program succeeded in its goal of exposing developers to the benefits of object-oriented programming with NEXTSTEP.

"The purchasers of the Eval Kit are exactly the types of corporate developers we are targeting, the ones who are deciding between NEXTSTEP and Windows plus development tools. We feel that we have successfully seeded a large number of development seats that we can convert to full NEXTSTEP deployments," she said.



NEXTSTEP Advantage package, which includes a video, book, and disk, was included in the Evaluation Kit.

Eval Kit buyers received full working copies of both the user and developer versions of NEXTSTEP 3.1 for Intel. To upgrade to Release 3.2, they have to purchase the complete user or developer versions for \$795 and \$1995, respectively.

NeXT targets midsize systems integrators

by DAN LAVIN

Redwood City - Looking for more partners to help sell NEXTSTEP to corporate sites, NeXT has set up a special sales, marketing, and support effort aimed at medium-sized systems integrators.

The new program, called the Object Channel, "will serve integrators whose major thrust is consulting and development services and who will create demand by recommending NEXTSTEP in their deployments," according to Bill Wesemann, NeXT's vice-president of North American sales.

Object Channel partners will include integrators and value-added resellers with sales in the \$5-\$20 million range. The key qualifier is that the organization creates demand for NEXTSTEP through the other services that they offer.

Integrators must apply for admittance into the program and then pay a \$7000 fee in return for a basket of services, including: two copies each of NEXTSTEP developer and user versions, one two-week course and two shorter courses, telephone support for

Object Channel Criteria

- Integrator, VAR, VAD
- Create demand for NEXTSTEP
- Emphasis on services and consulting
- \$7000 fee, attend courses

one year, some form of certification yet to be determined, and reseller discounts on product.

"With NEXTSTEP's shorter development cycles, integrators can bid a project at a lower overall cost and win the bid. Further, the integrators increase their profit margins on subsequent projects for other customers because so much of the code is reusable," Wesemann said.

NeXT has hired five dedicated sales reps to recruit and service the new partners. According to Wesemann, NeXT has structured its relationship with the existing direct sales force to encourage teamwork between groups.

Pollak files motion in copyright case

by DAN RUBY

Boston - Athena Design President David Pollak filed a writ of mandamus in the Lotus Development v. Borland International copyright case, while the company released a new version of its Mesa spreadsheet removing Lotus 1-2-3 macro compatibility from the product.

The moves followed an August ruling by U.S. District Judge Robert Keeton that the 1-2-3 macro reader in Borland's Quattro Pro spreadsheet infringes on Lotus's intellectual property. Borland shipped a nonoffending version of Quattro while appealing the decision to the U.S. Court of Appeals.

Though the decision has no immediate effect on Mesa or other programs besides Quattro that include 1-2-3 macro compatibility, Pollak believes it sets a precedent in allowing copyright protection for a computer language. "I am looking to establish that a programming language is a form of protected speech, no different than artistic or editorial expression," he said.

"It's as if Braille or American Sign Language were protected and anybody using them had to pay royalties," he added. Pollak, the principle author of Mesa, is also a member of the Rhode Island bar and has now been admitted to practice in the 1st U.S. Circuit. He will represent himself.

Pollak's action "points out how the [Lotus-Borland] case is affecting other companies. It has a broad effect on the industry," said a spokesman for Borland International. Lotus declined to comment on Pollak's motion.

If granted, the writ of mandamus would require Judge Keeton to review his decision in light of First Amendment guarantees for protected speech. The motion is not yet docketed by the court, but Pollak expects it to be heard before the end of 1993. The Borland appeal may not reach trial for a year or more.

The legal filing is by Pollak personally, not Athena Design. The company, however, released Mesa 1.5A without 1-2-3 macro compatibility. The new version, available free to registered users via the Internet archives (cs.orst.edu, ftp.cica.indiana.edu) or direct from Athena, is the only officially supported version of Mesa. The upgrade also includes a variety of bug fixes.

Athena Design can be reached at 617/734-6372.

NeXT enters Mid East

by DAN LAVIN

Montreal - NeXT has appointed The Open Solutions Corporation (TOPS) as the exclusive NEXTSTEP distributor for all Arabic countries in the Middle East and North Africa.

TOPS and its associated companies will localize NEXTSTEP for Arabic and act as a full-service value-added dealer. "We want to create in the Middle East the object-oriented system house. Education, consultancy, and seminars based on NEXTSTEP are all part of the picture," said Waleed Ghafari, TOPS' president.

Localization will begin next year in Canada. A TOPS associate, Computer Data Networks of Dubai, United Arab Emirates, was scheduled to kick off distribution of the English product at the Gulf Information Technology Exhibition on October 30 in Dubai. The show brings together government

representatives, oil-industry executives, and technology brokers from around the world.

The large companies in the Middle East are in industries where NeXT has already had proven success, according to Ghafari. Target industries for TOPS include oil, banking, finance, and health care.

TOPS is an experienced systems integrator operating in five countries with more than 100 employees. They are dedicated to UNIX-based solutions, with special expertise in Oracle-based SQL solutions. UNIX is very big in the Middle East and new installations are especially committed to the client-server model, Ghafari explained.

He added that TOPS' pricing for NEXTSTEP will be similar to European pricing. In the past, NeXT's prices outside the North American market have been 10-20 percent higher.

GS Corp goes for gold with reseller program

Kentfield, CA - Inaugurating a new strategy in the publishing-solution market, GS Corporation has introduced the GOLD Reseller Program, which combines pricing, marketing, technical support, and bundling options for qualified NEXTSTEP resellers to more easily sell GS's software, scan-

ners, and imagesetters. Offerings from other third parties are included in some of the bundles.

GS, formerly known as Goldleaf Corporation, is positioning its software and hardware offerings as solutions for the publishing professional in scanning, color printing, slidemaking, and optical

character recognition. For example, GS's Business Presentation System includes the Polaroid CI-5000S film recorder with eXTRASLIDE, an Epson ES-800C scanner, eXTRASCAN, and Lighthouse Design's Concurrence.

GS Corporation: 415/257-3515; info@goldleaf.com.

B R I E F S
C o n t i n u e d

ing to the Internet: An O'Reilly Buyer's Guide, by Susan Estrada, which helps users determine the type of Internet service best suited to their needs and includes appendices listing providers around the world. It costs \$15.95. TELOS, a Springer-Verlag imprint, published *The Complete Guide to the NEXTSTEP User Environment*, by Michael Shebanek at \$42.95, which includes a diskette with software demos and sample sounds and fonts. O'Reilly and Associates: 707/829-0515. TELOS: 212/460-1500.

Civilized Software has shipped a Motorola version of its MLAB advanced mathematical and statistical-modeling system. MLAB is designed for model-fitting problems in data-analysis fields. List price is \$1495 to \$2995; an Intel version is scheduled for release in Q4 of this year. Civilized: 301/652-4714; csi@sava@cs.umd.edu.

Cub's Systèmes is giving teachers and students a good reason to test its Cub'X Window 4.0 product: academic pricing. The \$100 fat-binary version of the X11R5 solution allows users to run X Window apps locally on NEXTSTEP computers or display X applications running on other X Window workstations on the network. Users can also purchase OSF Motif 1.2 for \$120. Cub'x: 33/1/47.08.74.40; academic@cubx.com.

Epitome has released a multiple-architecture version of its Redmark on-screen document-markup software. By using a "print image" PostScript file, users are able to put comments on transparent overlays of word-processing, page-layout, illustration, and spreadsheet documents. Version 1.2 is being sent free to all registered users; others may purchase the software for \$285. Epitome: 615/657-0910; 72677.1034@compuserve.com.

VNP Software announced in September UIBuilder palette, which lets developers use InterfaceBuilder's connection facilities to bind information to the user interface. It sells for \$795 per seat. VNP also released DevMan, a low-cost tool for managing multiproject software development that allows source-code control through the software's UI. It costs \$395 per seat. VNP: 802/496-7799.

PDO for HP demoed at UNIX Expo

by ROHIT KHARE

New York — NeXT and Hewlett-Packard demonstrated a working Portable Distributed Object (PDO) system here in September at UNIX Expo '93, and officials indicated that the real-world deployment of PDO was forging ahead.

The PDO Developer Kit was in "about a dozen" beta sites at press time, according to Paul Vais, head of NeXT's RISC business unit. Vais said that pricing and availability had not yet been determined.

In addition, NeXT Marketing Manager for Financial Services Jim McCrory said that NeXT plans to make PDO fully CORBA-compliant "as CORBA gets closer to reality" and to make its porting tools available to OEMs to create their own PDO servers.

He added that he expects Data General to offer its own PDO system soon after the HP release. ♦

Jobs

[FROM PAGE 17]

NEXTSTEP port to Hewlett-Packard's PA-RISC architecture is ahead of schedule and may be shown in a sneak preview at Comdex in November. The product will go into beta testing in the first quarter of 1994 and ship on schedule in the second quarter, said Jobs.

- PA-RISC versions of Portable Distributed Objects and Net-Info will go into beta testing this month and ship in the fourth quarter of 1993.

- NeXT is working on an advanced network-management system. "Some of the stuff we're doing for release in the 1995 time frame is going to take a quantum

leap in that area," he said.

In related European news, Jobs disclosed that a British PC manufacturer will soon join NeXT's list of OEMs. Although he declined to identify the firm, Jobs used an Elonex Plc '486-based system for his NEXTSTEP demo, and an Elonex representative acknowledged that the London-based company will be making an announcement concerning NEXTSTEP in the near future.

NeXT's alliance with Hewlett-Packard has proven valuable in making sales in Europe. Jobs said that Hewlett-Packard brought NeXT in to its most important account in Germany, where NEXTSTEP will be installed in a pilot

project. Sources identified the new customer as Germany's largest bank, Deutschebank.

Although it was not announced, sources acknowledged that NeXT is close to a large deal at London-based international law firm, Linklaters & Paines. The firm is in the final stages of evaluating NEXTSTEP, said Dr. Andrew Taylor, head of information systems and strategy, and if all goes as planned will expand its 60-user pilot project to a 1500-user worldwide installation in early 1995. ♦

Elizabeth Heichler is the European correspondent for the IDG News Service.

Auction

[FROM PAGE 17]

officials said that the sale was unrelated to ongoing negotiations with Canon, its former partner in hardware design and manufacturing. Despite initial indications that Canon might purchase the factory, it was never the biggest piece of the overall transaction, which is now nearing completion, according to sources close to the company.

The auction attracted about 300 bidders and onlookers, includ-

ing NeXT resellers, customers, and user-group members. Also present were members of the team that designed NeXT's world-leading automation facility, including Rich Page, former VP and general manager of the hardware division.

Many of the auctioned items were sold for typical used-equipment prices, while assembly-line components, such as a robotic laser-marking system and wave-solder machine, went for salvage

rates.

But products with the NeXT logo, such as color monitors and printers, commanded high prices, some higher than the current prices for such items from Bell Atlantic.

"If they [these bidders] want to pay that much, I'll sell them the same monitors for a lower price, and it will include a warranty," said Sam Goldberger of Spherical Solutions, a reseller of NeXT equipment. ♦

Secret talks in the land of midnight sun?

Arafat and Rabin might not be the most unlikely partnership of 1993. Now that Portable Distributed Objects (PDO) on PA-RISC is so far along, eyes are on Sun's SPARC architecture as the next likely target, especially if it is rewritten slightly to run on top of PDO. That could amount to a NEXT-omeland in Sun's occupied territories, with even stronger ties coming at date. There are persistent rumors that back-channel discussions are way at a safe house in Norway. Never let it be said that U.S. intelligence is the loop, at least when Lt. Sullivan is on the case.

On the other hand, sometimes Sullivan may just be lying about such bundles of joy. The deal to offer MacROMs for converting NeXTstations to black Macs, one here in previous columns, may have hit a snag. ms that Apple wants Switzerland-based Quix Computer to acquire assurances that NeXT's top brass finds intellectual-property problems with the Daydream product. Despite lobbying from NeXT community insiders, the hired letter has not been forthcoming.

The news is better for customers seeking an Oracle Office client, which is even more interesting now that Lotus and Oracle are working together to produce a Notes-compliant version. With Oracle's Larry Ellison sitting on NeXT's board of directors, the company is receptive to interest from three of NeXT's largest commercial customers. Light-house Design has been in touch with Ellison and NeXT to discuss producing a NEXTSTEP Oracle Office, possibly under contract to Oracle and possibly as independents.

Having already replaced its Progression systems with the NX model, Epson is planning to improve on that NEXTSTEP box. The new unit will address some of the speed problems that the present system has in compiling and drive access. The main modification for the new NX is the addition of at least two VL-bus slots for high-speed disk controllers and other third-party interface cards. This will make the NX a better prospect as a developer box and possibly a good CPU replacement for those of us with 21-inch NeXT monitors. Meanwhile, HP is scheduling briefings on its hot new Pentium box optimized for NEXTSTEP.

Greg Anderson's offer for PasteUp, which appeared to be a done deal at press time, was one of three Glenn Reid was considering. Things were not going terribly well until Anderson and Reid scheduled a face-to-face meeting late in September. Apparently their respective West Coast and East Coast business

styles caused some very typical clashes. Reid has a separate buyer for Exactly-Write, but that company is rumored to be facing some fresh competition in the low-end word-processing market on white hardware.

Deals are not progressing as rapidly for Appsoft's orphaned software: WriteNow is far from completion and may not justify anyone picking it up, but the *wn2tf* converter is worth something; Draw has competition and a weak reputation; Image has sold well enough, but WetPaint might be enough for many people, and it costs a lot less at retail (\$295 vs. \$995); Solution may be promising, but many have voiced warnings about the state of Solution's source code today.

While most of the publishing-related news is negative this month, the upside is that Linotype-Hell's Signastation, now based on Siemens Nixdorf boxes, is almost ready. The official roll-out could come before this sees print.

Lt. Sullivan

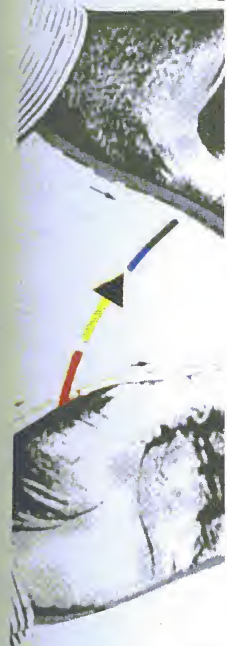


It seems increasingly unlikely that Informix will sell the rights for Wingz/NEXTSTEP to anybody, despite appeals from several of NeXT's biggest customers. One alternative is to run Wingz on other platforms and XHost onto NEXTSTEP boxes. In the meantime, there are rumors of other developers looking to give Mesa some competition, either by writing their own applications from scratch or taking over one of the orphans and revamping it into a new spreadsheet product.

The Fidelity prototype was completed on NEXTSTEP but it appears that implementation will probably happen on Windows or Windows NT. Steve Jobs and his top sales execs are headed to Boston for a rescue mission in early October and there's no telling how that will affect things. Fidelity didn't get to the top of the fund-management heap by taking the safe route, so Steve may get a foothold with that angle. Of course, Pencom would be happy to do either platform, as long as they keep the business. That's a danger with systems integrators — they look great on NeXT's corporate resume but have no loyalty.

Even better than trading land for peace is trading tips for Lt. Sullivan coffee mugs. Leave Sullivan voice mail at 415/978-3374 or e-mail at sullivan@nextworld.com. If you want to ensure the secrecy surrounding your safe house, Sullivan's RSA public key is available upon request.

The



mix is an unprecedented use of voice mail, e-mail and telephone communication. Through the use of consistent interface, it

Alembic Systems International
14 Inverness Drive East Bldg.



Sc

"Video of the Harley"

Some machines perform others. That's because machines are made for while others are made for serious professional. Machine II for example, real-time video of NEXTSTEP with an effects found only in studios.

toll free
1-800-452-7608

ces identified the new
Germany's largest
chebank.
it was not announced,
nowledged that NeXT
large deal at London-
national law firm,
& Paines. The firm is
stages of evaluating
, said Dr. Andrew
d of information sys-
ategy, and if all goes
will expand its 60-
oject to a 1500-user
nstallation in early

eichler is the Euro-
ndent for the IDG
e.

icts with the NeXT
color monitors and
nmanded high prices,
r than the current
ach items from Bell

these bidders] want
much, I'll sell them the
ors for a lower price,
nclude a warranty,"
oldberger of Spheri-
s, a reseller of NeXT

sum?

buyer for Exactly-
competition in the

phaned software:
icking it up, but
n and a weak rep-
enough for many
on may be promis-
the state of Solu-

news is negative
ell's Signastation,
most ready. The
s print.

rmix will sell the
despite appeals
rs. One alternative
lost onto NEXT-
ors of other devel-
on, either by writ-
r taking over one
ew spreadsheet

on NEXTSTEP but
ly happen on Win-
eaded to Boston
w that will affect
heap by taking the
se, Pencom would
ss. That's a dan-
orate resume but

Lt. Sullivan cof-
-mail at sulli-
rrounding your
quest.

**The common necessities
of communication
mixed together.**



mix
multimedia information exchange

mix is an unprecedented approach to the use of voice mail, e-mail, fax, modem, and telephone communications on the NEXTSTEP platform.

Through the use of a simple, consistent interface, mix opens up

countless new possibilities for those exploring the revolution of media communications.

For more information, please contact the address below.

 Alembic Systems International Ltd.
14 Inverness Drive East Bldg. G-228 • Englewood, Colorado 80112 • 800.452.7608 • fax: 303.799.1435 • info@alembic.com

Circle 27 on reader service card



Screen Machine II.

"Video drag racing equipment for the Harley of Operating Environments."

Some machines perform better than others. That's because some machines are made for casual users while others are made for the serious professional. Take Screen Machine II for example, a powerful real-time video digitizer for NEXTSTEP with an array of digital effects found only in expert video studios.

Manufactured with the latest digital video technology, all Screen Machine hardware combines high-quality image recording, digital video signal processing, and real-time video display on a single board!

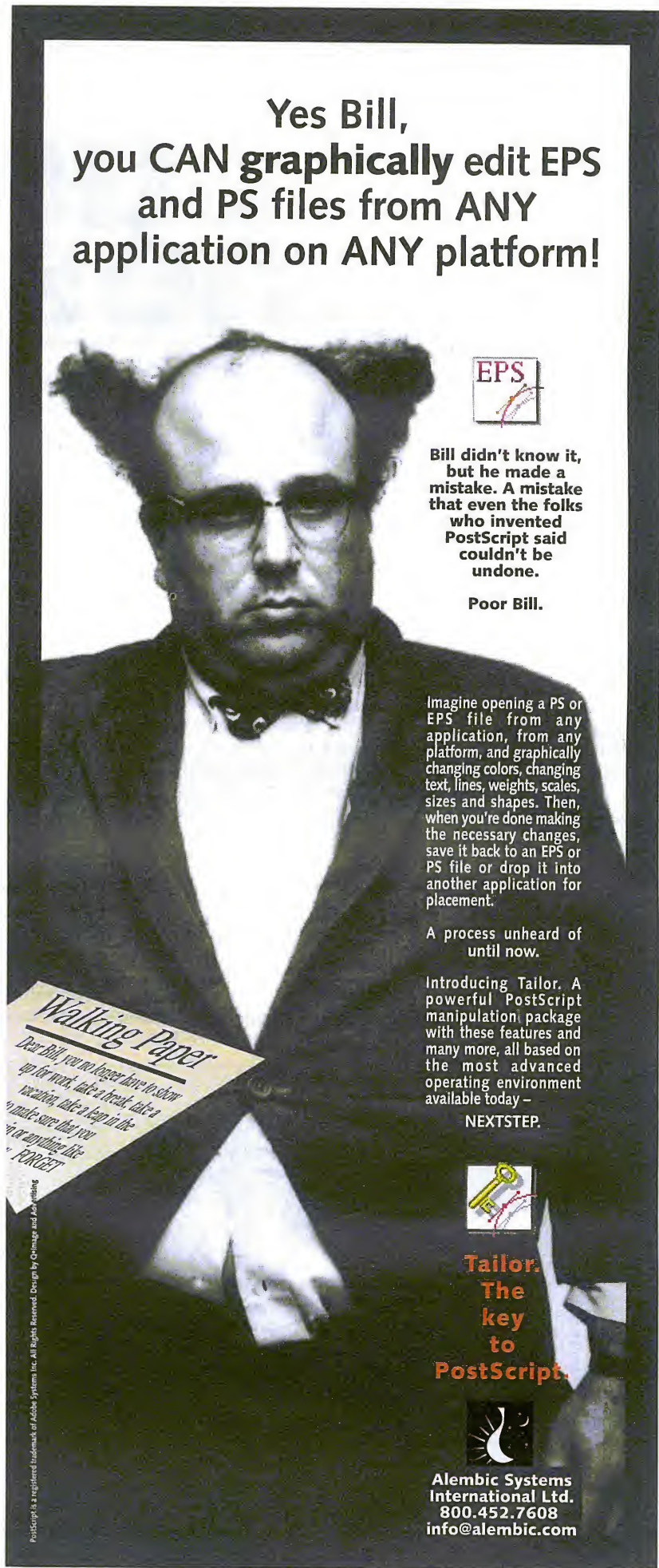
Screen Machine II.
The hardware for the hardcore.


Alembic Systems International Ltd.
14 Inverness Dr. East Bldg G-228
Englewood, CO 80112

toll free
1-800-452-7608 303.799.6223 • fax 303.799.1435 • info@alembic.com

Circle 47 on reader service card

**Yes Bill,
you CAN graphically edit EPS
and PS files from ANY
application on ANY platform!**





Bill didn't know it, but he made a mistake. A mistake that even the folks who invented PostScript said couldn't be undone.


Poor Bill.

Imagine opening a PS or EPS file from any application, from any platform, and graphically changing colors, changing text, lines, weights, scales, sizes and shapes. Then, when you're done making the necessary changes, save it back to an EPS or PS file or drop it into another application for placement.


A process unheard of until now.

Introducing Tailor. A powerful PostScript manipulation package with these features and many more, all based on the most advanced operating environment available today -

NEXTSTEP.



Tailor.
The key to PostScript.



Alembic Systems International Ltd.
800.452.7608
info@alembic.com

Walking Paper
Dear Bill, you no longer have to show up for work, take a break, take a vacation, take a leap in the air, make sure that you're in a position to FORGET.

PostScript is a registered trademark of Adobe Systems, Inc. All Rights Reserved. Design by O'Image and Advertising.

Circle 48 on reader service card

Start Your Engines

Database servers drive the enterprise; your mileage may vary

BY DANIEL MILES KEHOE AND SIMSON L. GARFINKEL

The lifeblood of any organization is its data. Maybe it is clinical records of new drug trials, bond prices at the close of market, or the current balance of customer accounts. It must be readily available, and it absolutely, positively must be accurate. Otherwise the organization grinds to a halt.

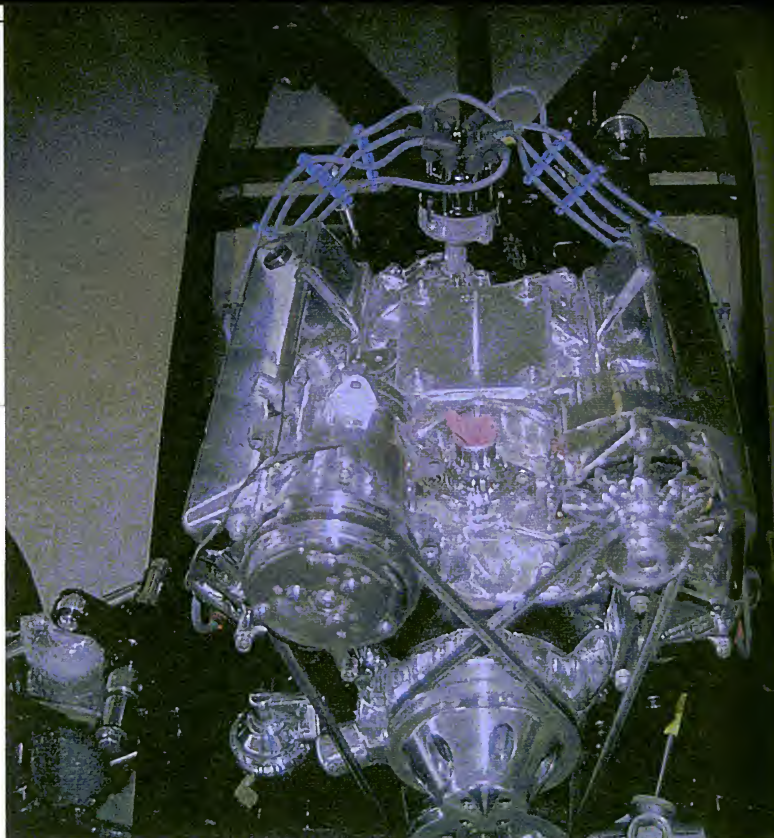
Pumping the data through the organization is a software machine—a database engine. It may crank out transactions on a mainframe, purr like a cat across a distributed network, or put-put along on a desktop PC. It provides a central repository for information that can be protected, managed, and backed up. It also provides access to the data by users and other programs that need to act on the information.

Database servers all share common functionality. At a minimum, the server runs as a separate program (a process) on a central hardware platform, listening for client requests for data retrieval or manipulation. The server handles multiuser, multitask process scheduling, input and output from a dedicated file space on a hard disk, caching of data to optimize responsiveness, sharing of data among users without conflict, and processing of commands for administration and manipulation of the database.

In this article, we look at industrial-strength database servers—programs running on centralized computers that users access over a high-speed network. Most of the servers included in this article support Structured Query Language (SQL), an industry-standard language for communicating between database servers and clients. Unlike a PC-based database management system (DBMS), which usually includes a user interface for accessing and manipulating the data, the database servers described here are designed to work with separate—and often custom-built—front-end programs. (See “Data Dashboards,” *NeXTWORLD*, February/March 1993, for a survey of NeXTSTEP database front ends and development tools.)

In the early days of NEXTSTEP, users had limited choice among database engines. One of the leading SQL data servers, Sybase, was available to run on NeXT hardware and was bundled for a time with the operating system. Later, the market-leading vendor, Oracle, began shipping a version of its server for NEXTSTEP 2.1.

With the introduction of DBKit in NEXTSTEP 3.0 (see the sidebar, “The NEXTSTEP Connection”), adapters could be easily written for any



database engine. NeXT's database strategy is based upon the idea of interoperability: NEXTSTEP works with practically everything. What was once a liability turned into one of NeXT's best assets.

NeXT ships DBKit with adapters for Oracle and Sybase; third parties have developed their own adapters for most of the other well-established and popular commercial data servers, including Gupta SQLBase Server, IBM's DB2 and VSAM (through Micro Decisionware's OS/2 gateway product), INGRES, Borland InterBase, and NCR Teradata. Most of these data-base programs run on dedicated servers (not running NEXTSTEP), which you connect with NEXTSTEP-based computers over a network, although Gupta SQLBase Server and Borland InterBase are both also available in native NEXTSTEP versions. SofDesign Solutions' QuickBase and Blue Rose's Rosebase are NEXTSTEP-only data servers. Although this denies these databases access to fast RISC-based servers now, this should be less of an issue as NeXT's Portable Distributed Object system becomes available on other platforms.

Serving up the servers

For NEXTSTEP users, this means that they can connect their front-end applications to almost any database server they choose. Or, more commonly, to the database server they already have.

Though the cost of the software itself may be modest, the costs of deploying the system, administering the database, and re-engineering applications used with the system can quickly make the software costs appear insignificant. And since the costs of changing your mind—and changing your data server—can be momentous, organizations rarely switch from one server to another once the initial purchase is made. Thus, choosing a data server has a lot more in common with choosing an operating system than with choosing an application program.

If you're planning to use NEXTSTEP-based workstations to access information that's already stored on your mainframe or departmental server, chances are that the best database for you right now is the one you're already using. The product sidebars with this article will tell you where to find DBKit adapters for your DBMS.

If you are just now building a new information-management system, the first decision you'll need to make is where you want to run the engine. A variety of servers are available for NEXTSTEP now, which means that you can cut your hardware costs by running the data server on one of your workstations (or your file server). Alternatively, if you are out to replace a mainframe, you might be better off buying a minicomputer or mainframe-class workstation and using the computer just as a data vault. In this case, you can run any operating system you want on the server

ES PAGE 27

Vy pos

In this report, we survey them that can be used with NEXTSTEP and those seen on the network. Comments from users between data servers; in similar to your own.

Gupta SQLBase Server. Parabase Software Corp. Server, a data server ported by NeXTWORLD, the Naval San Diego was evaluating the research division, reasons: price and size. processor would require \$9995 for an unlimited user. To manage the content interested in deploying a server running NEXTSTEP. E means we can consider it work to the central server for Sun SPARC platforms RISC-based hardware if I

GUPTA SQLBASE SERVER. \$995 single user; \$1995 A NEXTSTEP version of the compact compared to Sybase. Parabase Software Corp. 206/828-8172; 206-826

IBM data servers. Micro Decisionware's MDIing on IBM mainframes. a special bridge that runs NEXTSTEP users can connect Microsoft SQL Bridge on a machine, and NEXTSTEP ADABAS, or IMS/DB data frames over LU6.2 network. The gateway system to be able to access both servers, says Gus Reyna,

MDI DATABASE GATEWAY. \$6995 unlimited OS/2 users. Micro Decisionware, 299. 2706; 800/221-3634.

INGRES. One of the oldest UNIX database academic and corporate version's Who's Calling? and commercially unavailable on NeXT must run it on another operating engine over the network. I with PenUltimate Developer of DBConnect (1.2) connects

F E A T U R E

Vying for pole position

In this report, we surveyed users of every relational database management system that can be used with NEXTSTEP, both those servers that run natively under NEXTSTEP and those servers that a NEXTSTEP client can connect to across a network. Comments from other users paint the best picture of the differences between data servers; in their comments, you're likely to find situations that are similar to your own.

Gupta SQLBase Server

Parabase Software Corporation (formerly IP Design) sells Gupta SQLBase Server, a data server popular on DOS and Windows platforms. When contacted by *NeXTWORLD*, the Naval Command Control and Ocean Surveillance Center in San Diego was evaluating the product. R.S. Brown, a scientist in the organization's research division, explained that he was intrigued by the product for two reasons: price and size. "Running an unlimited-user version of Sybase on our processor would require a \$100,000 license. In contrast, the SQLBase Server is \$9995 for an unlimited version," says Brown.

To manage the continuing proliferation of government forms, Brown is interested in deploying a database-management application on laptop computers running NEXTSTEP. Brown says the Gupta SQLBase Server "is trim, which means we can consider handling forms on a laptop and uploading completed work to the central server." Because the Gupta SQLBase Server is also available for Sun SPARC platforms, Brown says that he can move his database to faster RISC-based hardware if his Intel-based NEXTSTEP server proves inadequate.

GUPTA SQLBASE SERVER

\$995 single user; \$1995 five users; \$4995 20 users

A NEXTSTEP version of the SQL server popular under Windows and DOS. Very compact compared to Sybase or Oracle.

Parabase Software Corporation, 550 Kirkland Way #100, Kirkland, WA 98033. 206/828-8172; 206-828-2107 fax; info@parabase.com.

IBM data servers

Micro Decisionware's MDI Database Gateway offers access to databases residing on IBM mainframes. The Gateway consists of two parts: a DBKit adapter and a special bridge that runs on an IBM OS/2-based computer. Using the system, NEXTSTEP users can connect to the OS/2 EE database server. Add to the mix Microsoft SQL Bridge and the MDI Host Access Server running on the OS/2 machine, and NEXTSTEP applications can connect to IBM DB2, VSAM, IDMS, ADABAS, or IMS/DB database-management systems running on IBM mainframes over LU6.2 networks.

The gateway system is ideal for customers who are in transition and need to be able to access both their mainframes as well as workstation-based data servers, says Gus Reyna, UNIX product manager for Micro Decisionware.

MDI DATABASE GATEWAY

\$6995 unlimited OS/2 users; \$60,000-\$155,000 unlimited mainframe users

Micro Decisionware, 2995 Wilderness Place, Boulder, CO 80301. 303/443-2706; 800/221-3634.

INGRES

One of the oldest UNIX databases, INGRES has had a long history in both the academic and corporate worlds. Although the database is at the heart of Adama-tion's Who's Calling? and What's Happening? scheduling programs, it is commercially unavailable on NEXTSTEP. Instead, NeXT users who want to use INGRES must run it on another operating system, such as Solaris, and connect to the engine over the network. Probably the easiest way to make the connection is with PenUltimate Development's DBKit adapter, DBConnect. The current version of DBConnect (1.2) connects to INGRES SQL servers running on Sun, Data Gen-

eral, and HP platforms. Future versions will connect to Ingres running on IBM RS/6000, Pyramid, and Sequent platforms.

At the Mayo Foundation in Rochester, Minnesota, database management coordinator Michael Fryer is evaluating DBConnect for the INGRES data server. "We've been using an Ingres server since 1985; we're particularly interested in using NEXTSTEP as a client with the INGRES distributed-database capability," says Fryer, mentioning research facilities the Mayo Foundation runs in Florida and Arizona. "With the INGRES Star product we'll be able to register a local database in the distributed-database server, which will let researchers access data across a WAN as transparently as a local server."

ASK INGRES/INTELLIGENT DATABASE

\$2500 single user-\$384,000 unlimited users

Ask Group, 1080 Marina Village Pkwy., Alameda, CA 94501. 510/769-1400, 800/446-4737.

PenUltimate/DBNS, 1319 Summit Ave., St. Paul, MN 55105. 612/646-1336.

InterBase

The most interesting entrant in the NEXTSTEP data server race may be Borland International, if for no other reason than its visibility as a leading developer for DOS and Windows. Borland might never have noticed NeXT, if it were not for two InterBase customers who wanted a version of InterBase for NEXTSTEP. Driven by Chicago trader NationsBanc-CRT and pharmaceutical giant Abbott Laboratories, Borland is now offering a NEXTSTEP-for-Intel version of InterBase to all NeXT customers. "We've found a strong business case for marketing a NEXTSTEP version," says Betsy Burton, product manager for InterBase.

In 1987, when NationsBanc-CRT adopted InterBase, it was one of the few data servers that accommodated triggers, which the financial group hoped to use to maintain the database's integrity. NationsBanc-CRT also liked InterBase's facility for instant database recovery, which uses a technique called versioning. In recent years, John Bruns, vice-president of technology for NationsBanc-CRT, has developed an increasing appreciation for InterBase's versioning architecture. "Its locking strategy is a prerequisite for storing objects in an object-oriented system," he says. The architecture also makes InterBase a better choice for environments that require both on-line transaction processing and support for executive information systems. "Versioning allows faster response for our trading applications. Our traders don't want to be locked out by someone doing updates. They want an answer now."

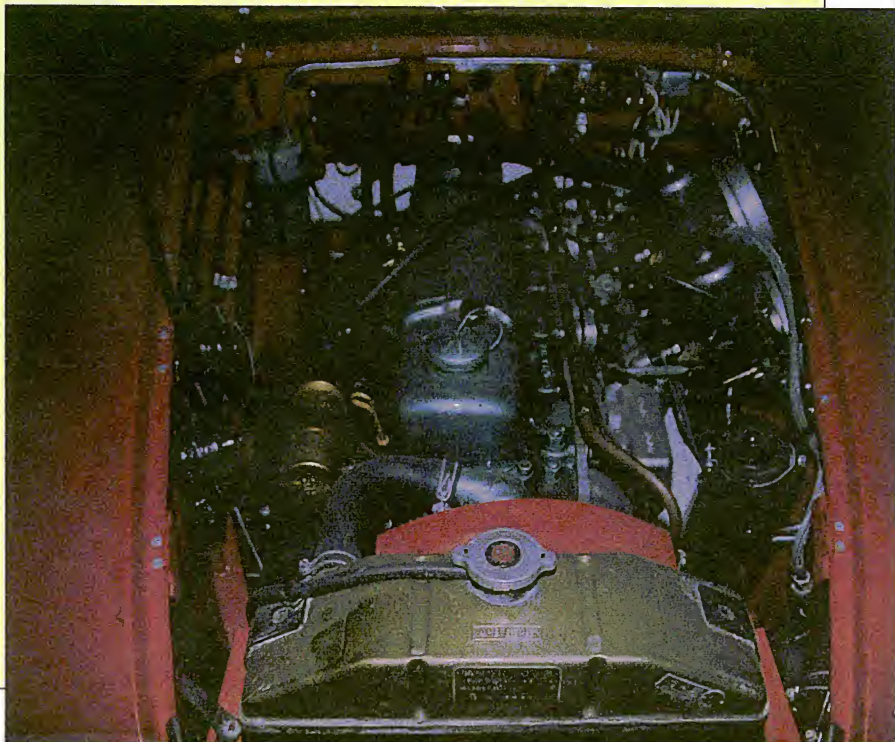
InterBase also offers special features, such as distributed-database capability and ability to handle arrays (useful for large-scale modeling).

INTERBASE

\$1450 for single NEXTSTEP user

SQL server for mixed environments. A versioning architecture makes distributed databases and instant recoveries possible. Currently in beta.

Borland International, 1800 Green Hills Rd., Scotts Valley, CA 95067. 408/431-5428, 800/245-7367.




on the idea of inter-
ing. What was

ybase; third parties
er well-established
SQLBase Server,
OS/2 gateway
ita. Most of these
ing NEXTSTEP),
over a network,
e are both also
ervers' QuickBase
rvers. Although this
s now, this should
ect system becomes

at their front-end
. Or, more com-

dest, the costs of
l re-engineering
e software costs
your mind - and
nizations rarely
se is made. Thus,
choosing an oper-
m.
stations to access
r departmental
now is the one
ticle will tell you

management system,
t to run the engine.
which means that
rver on one of your
are out to replace a
outer or mainframe-
a vault. In this case,
ver  PAGE 27

NCR

NCR's DBC 1012 parallel-processing computer is delivered with its own SQL-compliant database-management software. Originally designed by Teradata, a company acquired by NCR in 1992, the database is well suited both for decision support as well as on-line transaction processing. Few organizations can afford these massively parallel machines, but those who can consider them strategic weapons.

At Bank of America in San Francisco, Michael Koved, manager of finance in the bank's acquisition analysis department, uses Improv on a NeXT to analyze the results of very large complex queries returned by the bank's DBC 1012. Koved says, "I logged 17,000 CPU hours in one month alone. Remember there's only 720 hours in a month. You can only do that on a Teradata, with its parallel processing."

All of the bank's records, which are entered and managed in dozens of different data-processing systems, are consolidated in the Teradata for use by analysts such as Koved. "It's unusual in banking, or in any large organization, to maintain such a complete data store," says Koved. "It requires an exceptional organizational commitment. Of course, it also takes a 500-MIPS machine with 400GB of storage, plus the Teradata architecture, to be able to process 7,000,000 transactions in less than a minute. And some stuff we do here on the Teradata takes hours. There's no other system that could do it."

NCR DBKIT ADAPTER

\$995 single copy; \$5000 ten users; \$25,000 unlimited license

NCR DBC 1012

\$700,000-\$15,000,000

Combination of parallel-processing hardware and DBMS software for high-performance, fault-tolerant SQL relational-database management.

NCR, 1700 South Patterson Blvd., Dayton, OH 45479. 800/225-5627, 619/485-3600; ask.lcpd@sandiegoca.ncr.com.

Oracle

According to research firm Dataquest, Oracle dominated the RDBMS market with 47 percent of all licensing revenue in 1992, partly because Oracle is available as a server running on more platforms than any other RDBMS product. NeXT provides a DBKit adapter for Oracle Version 6 bundled with NEXTSTEP.

Neil Greene, president of benchMark Development in Lexington, Kentucky, and a consultant to the Association of Racing Commissioners International, chose Oracle as a server for an application that delivers licensing records to 300 racetracks around the world.

"The reason we chose Oracle has nothing to do with NEXTSTEP," says Greene. "We're delivering a character-based dial-up application. It's running on a NeXTcube now, but I know computers will change over five years and I wanted to be able to move the application to other computers if I wanted. An Oracle application is very portable."

Although Greene found Oracle's development tools, SQL Forms and SQL Menus, much easier to use than Sybase development tools, he notes they only produce character-based applications and says he is currently developing applications for the Oracle server that will use a NEXTSTEP interface.

ORACLE RDBMS

\$3200 single user; \$6400 eight users

Oracle's Version 6 SQL server was available in a version intended for NEXTSTEP 2.1 and is available on other platforms across a network using a NeXT-supplied DBKit adapter. The new ORACLE7, released in 1992, is not currently available in a version for NEXTSTEP but may be ported to NEXTSTEP 3.2.

Oracle Corporation, 500 Oracle Pkwy., Redwood Shores, CA 94065. 415/506-5072, 800-345-3267.

QuickBase

SofDesign Solutions, of Greenwich, Connecticut, has been delivering its QuickBase product to NEXTSTEP developers in various versions for over a year. Cody Bateman of the Everest Group in Dallas is one developer who chose QuickBase after a comprehensive evaluation of data servers at NeXTWORLD Expo in May.

"The reason was cost, primarily," says Bateman. "QuickBase is small and quick, but it's also very inexpensive and, for us, delivers the best price-to-performance ratio. We can use it on laptops to demo our products and then move it to a '486 system. Our customers are not going to spend \$10,000 to run a 4000-item database, so QuickBase makes sense to us."

QuickBase comes with a variety of NEXTSTEP-based administrative tools for starting and stopping servers, adding new users, and viewing raw database data. The server has a feature called notification, which alerts clients displaying a particular record when that record is updated. QuickBase ships with source code for several demonstration applications.

Bateman cautions that QuickBase offers only a subset of the SQL language. "But those SQL statements are the only ones we need, and it eliminates the overhead of all the other commands," he says. In addition to advantages of cost, size, and speed, Bateman says SofDesign Solutions provides the best customer support of the nearly dozen vendors with which he works.

QUICKBASE

\$695 three users

The least expensive SQL server for NEXTSTEP. The product delivers features, such as notification, that are not available on some higher-priced products. A limited set of SQL statements could be a drawback.

SofDesign Solutions, 47 Arch St., Greenwich, CT 06830. 203/629-0970, 800/234-0990; sdc@gun.com.

Rosebase

San Francisco Bay-area start-up Blue Rose Systems emphasizes the importance of query-based decision support to potential users of its Rosebase data server. The server, which is currently in beta testing, is envisioned to run under both NEXTSTEP and computers equipped with NeXT's Portable Distributed Objects.

Hubert Hickman, a developer of health-care software in Omaha, Nebraska, is considering adopting Rosebase as his server of choice "because we want a server that is robust," he says. Hickman considered QuickBase but preferred Rosebase because it implements more of ANSI SQL. "It is industrial quality in terms of its breadth and depth of SQL support," he says.

Hickman is developing his application using a Sybase five-user limited license but is unhappy with the tier-based licensing fees demanded by many database server vendors. Hickman says, "With Gupta, we'd have to buy licenses for five, 20, or 50 users. What if our customer just wants a 12-user license?" Hickman hopes that the accessibility and responsiveness of Blue Rose Systems will serve his customers better. He emphasizes, however, that cost is only one aspect of his decision, and that he requires that any server he adopts be robust.

ROSEBASE

\$395 per user

An inexpensive SQL-compatible server for NEXTSTEP, optimized for decision support.

Blue Rose Systems, 26883 Dezhara Way, Los Altos Hills, CA 94022. 415/949-2426; 415/941-7129 fax; info@BlueRose.com.

Sybase

Sybase is the original NEXTSTEP database: five-connection developer licenses were provided bundled with NeXT's original NeXTcube and 1.0 operating system. Currently, Sybase no longer supports its database engine on the NEXTSTEP operating system. Instead, Sybase expects NEXTSTEP workstations to connect with Sybase servers running on high-end platforms such as Sequent, Sun, or HP. Sybase continues to supply NEXTSTEP client libraries for database developers. Furthermore, NeXT bundles a Sybase DBKit adapter with every copy of NeXTSTEP, making it easy for NeXT users to connect with Sybase SQL servers. As a result, Sybase remains the database of choice in large portions of the NeXT community.

Outside the NeXT world, Sybase ranks as the number-three database, according to the research firm Dataquest, closely trailing Ingres and Oracle with 13 percent of all licensing revenue in 1992. The product's transaction-oriented processing speed is considered very good and it offers a very full feature set, including support for stored procedures, triggers, and a full complement of administrative functions.

SYBASE SQL SERVER

\$3750 per single UNIX user; \$115,480 unlimited users

A popular data server, both for older versions of NEXTSTEP and on other hardware platforms. NeXT bundles a DBKit adapter with NEXTSTEP for Sybase servers.

Sybase, 6475 Christie Ave., Emeryville, CA 94608. 510/596-3500, 800/879-2273.



and connect to it from .

In this report, we s ment system that can b eired various considerat mance, features, standa

If all else were equa looking for the compan requirements are very sim example, you may be d a limited amount of dat QuickBase. At a price o server you'll deploy und

Database speed is a That's because a slower port the same number o of time. Unfortunately, c many manufacturers op ter than others. Add to t different hardware platf a lot more difficult than can crank out of a laser

The speed of your d On-line transaction proc tional data server. Order

The N

NeXT's Database Kit is a fr applications. The kit consi handle the task of access screen, and writing back u

DBKit's power lies in it that handle the nitty-gritty work protocol.

Although DBKit allows server, most DBKit prograr adapters hide the differenc gram can connect with a w it easier for a company to c with a particular data serve to produce a single databas erate with any NEXTSTEP s DBKit is also a natural

Administrative tools for raw database clients displaying ships with source

the SQL language. eliminates the advantages of rides the best cus-

delivers features, iced products. A

629-0970,

zes the importance base data server. run under both tributed Objects. Omaha, Nebraska, cause we want a use but preferred dustrial quality in

re-user limited li- ended by many data- y licenses for five, license?" Hickman e Systems will serve nly one aspect of be robust.

zed for decision

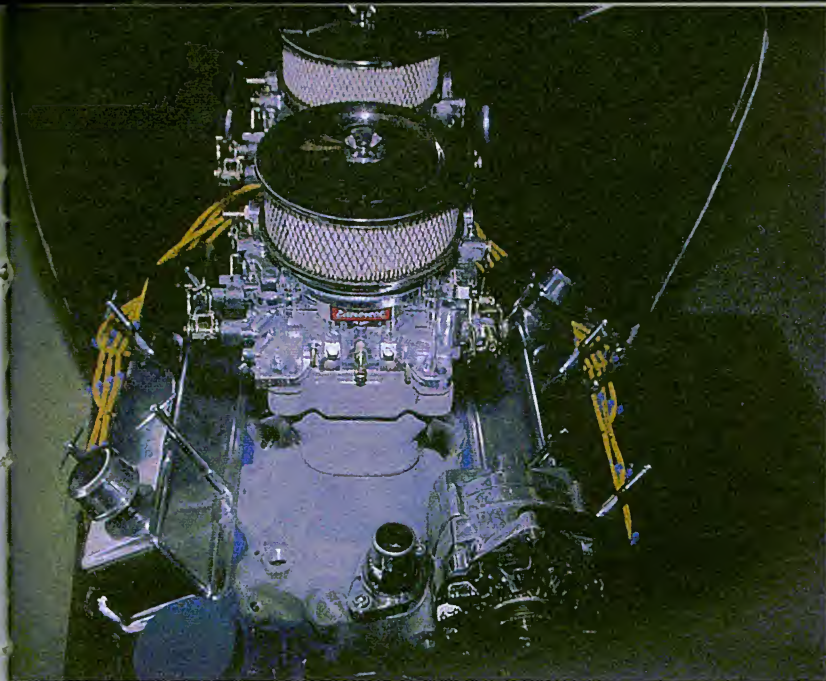
A 94022. 415/949-

developer licenses .0 operating system. on the NEXTSTEP stations to connect Sequent, Sun, or HP. database developers. ery copy of NeXT- SQL servers. As a ons of the NeXT

er-three database, igres and Oracle with ransaction-oriented y full feature set, l complement of ad-

and on other hard- TEP for Sybase

6-3500, 800/879-



and connect to it from NEXTSTEP over the network.

In this report, we surveyed users of every relational database-management system that can be used with NEXTSTEP. In our interviews, buyers cited various considerations for differentiating databases, including performance, features, standards, support, and price.

If all else were equal, you could simply choose your data server by looking for the company that offered the best price. And indeed, if your requirements are very simple, this may be the only analysis you'll need. For example, you may be developing an uncomplicated application that stores a limited amount of data. In this case, you'll be well served by SofDesign's QuickBase. At a price of \$695 for three users, it's the least expensive data server you'll deploy under NEXTSTEP.

Database speed is another primary concern for many purchasers. That's because a slower database engine requires faster hardware to support the same number of users or to answer a query in the same amount of time. Unfortunately, comparing engines is notoriously difficult, since many manufacturers optimize their systems to perform different tasks better than others. Add to the complexity the fact that different servers run on different hardware platforms. Thus, determining the speed of a database is a lot more difficult than calculating the number of pages per minute you can crank out of a laser printer.

The speed of your database also depends on how you will be using it. On-line transaction processing (OLTP) is the traditional forte of the relational data server. Order-entry applications make for classic OLTP - clerks

write data to the database in repetitive short bursts. If you are going to use your engine to support management applications involving browsing through large data sets, reading, analyzing, and making only occasional updates, you should consider servers that are optimized for on-line complex processing (OLCP).

Database performance is tracked by the Transaction Performance Processing Council (TPC). The TPC is a nonprofit organization funded by a large group of manufacturers of computer and data servers, chartered to disseminate objective performance data. The TPC maintains and publishes a list of all systems that have been tested with standardized benchmarks. The TPC does not run a single benchmark on data engines; rather, it tests database-management systems using several benchmarks, one optimized for OLTP and another for OLCP. TPC reports (available from the council at 408/295-8894) detail how fast each server runs on a particular hardware configuration. Unfortunately, different benchmarks are not always comparable: How do you compare Oracle7 running on a SPARCstation 10 with Ingres running on an HP 700?

Some users may wish to consider the size of the database server. While all servers can handle gigabytes of on-line storage, few can function with less than 10MB or 20MB. The exception is the four data server products that run natively under NEXTSTEP, which all fit neatly in less than 2MB.

Bells and whistles

Beyond these factors, each database engine offers its own advantages and special features. Here are some key terms and concepts:

STRUCTURED QUERY LANGUAGE (SQL) - Often pronounced "sequel," SQL is an industry-standard language for communicating between database servers and clients. Originally developed by IBM in the 1970s, SQL has since been formalized by the American National Standards Institute in two standards: ANSI Standard SQL and ANSI Standard SQL Level II. Unfortunately, even with the standards, there are still headaches. Most manufacturers of data-server products extend SQL with their own command statements, allowing access to specialized features of their products. Some manufacturers do not support the full set of Standard SQL or Level II statements.

NONTRADITIONAL DATA TYPES - Traditional data types are character fields of limited length, integers, floating-point numbers, or Boolean yes/no pairs. Date and time data types are also traditional, though there can be variation in how they are formatted and stored inside the data server. Nontraditional data types, which become very important in a graphical environment such as NEXTSTEP, include memo fields and other long text data, graphics, sound, and fields for the storage of entire files.

BINARY LARGE OBJECT (BLOB) - Older data-server products may support "long" data types 32KB or 64KB in size; other data servers

The NEXTSTEP Connection

NeXT's Database Kit is a framework for developing object-oriented database applications. The kit consists of a set of Objective-C classes that automatically handle the task of accessing data stored in a database, displaying it on a screen, and writing back updates if and when necessary.

DBKit's power lies in its adapters, which are dynamically loaded modules that handle the nitty-gritty of interfacing with a particular database vendor's network protocol.

Although DBKit allows the programmer to send SQL directly to the data server, most DBKit programmers instead use the kit's own API. Because the adapters hide the differences between different databases, the same DBKit program can connect with a wide range of servers without modification. This makes it easier for a company to change its database in midstream if problems surface with a particular data server; it also makes it possible for third-party developers to produce a single database-browsing or -reporting application that will interoperate with any NEXTSTEP supported database out of the box.

DBKit is also a natural for companies trying to migrate their databases from

mainframes to open systems. Use NEXTSTEP to access the mainframe today, and when you move to a network-based server later, you won't need to change a single line in the NEXTSTEP applications: just switch the server.

Since DBKit is database independent, it eases the risk for some companies of trying out an unproven database from a start-up company. If the application fails, users can always switch their adapters and buy a license for Oracle or Sybase. DBKit also makes it possible for developers to create reporting and management applications that work with any database supported by NEXTSTEP, rather than having to write to a particular company's API.

One disadvantage of DBKit is performance. Using NeXT's object-oriented layer is somewhat slower than directly using a company's proprietary API and client libraries supplied by the vendor of the database-management systems. If you are building a large transaction-processing system and are sure that the choice of database will never change, you might be better off developing code that accesses the data server directly. But for applications in which raw performance is less important than flexibility, DBKit's features are without parallel in the client-server world.

support data types of unlimited size but only through pointers to external operating-system files. Ideally, a data server should provide storage for BLOBs, which are nontraditional data handled as large blocks, or objects, of binary information. BLOBs are sometimes called "opaque," since they are not interpreted by the server.

VERSIONING — Servers that are optimized for OLCP, such as InterBase, INGRES, Rosebase, or ORACLE7, are often implemented with a new approach to record locking called versioning. In the standard approach, any data that is being accessed is locked, maintaining consistency at the expense of concurrency during lengthy transactions. With versioning, each user gets a snapshot of the database at the moment the transaction begins. With InterBase, for example, the only locks that are applied are ones that prevent more than one person from writing over the same data. Anyone can read data and anyone can write without have an adverse impact on performance. If underlying data changes before a write is committed, InterBase will discard the attempted change and notify the user.

STORED PROCEDURE — Stored procedures are programs that reside in the data server and can be called from any application program. They increase performance of applications by eliminating the need to reparse SQL statements. Furthermore, by relying on stored procedures inside the data server, application developers can increase the independence of front-end applications, reducing the frequency of redeploying front-end applications as applications are improved. While most SQL servers make some provision for stored procedures, they are all implemented differently, making them mutually incompatible. NeXT's DBKit makes no use of stored procedures, but they can be used in NEXTSTEP applications by sending SQL directly to the server.

TRIGGER — A trigger is a special kind of stored procedure that is executed automatically by a data server when a predefined type of change is made to the database. A trigger can edit data, perform calculations, update related data, and enforce integrity constraints.

DECLARATIVE REFERENTIAL INTEGRITY — A technique for enforcing data integrity by storing data relationships inside the server. Sometimes implemented with stored procedures, declarative referential integrity prevents the server from committing database transactions unless particular relationships remain true. Such a system might prevent a database user from deleting a department if there are still employees working in it or deleting the records of customers who have outstanding orders. DBKit cannot create referential integrity tables, but if they exist, all DBKit transactions will be moderated by them.

NOTIFICATION AND EVENT ALERTS — Some data servers can alert client programs when a predefined type of event occurs. For example, with QuickBase, when one user updates a database record, all other users who have that record displayed on their screens similarly receive the update. Notification and alerts are often implemented with stored procedures and are particularly useful when applications monitor real-time processes, such as in financial trading.

SHADOWING AND MIRRORING — A technique by which a server stores multiple copies of its database across separate disk drives, allowing for instant recovery should one disk fail. Shadowing and mirroring do not eliminate the need for regular backups, since errors can be introduced in the database without hardware failures, and neither technique protects data from loss by fire or theft. Although mirroring is supported by some servers, it may be easier to purchase redundant arrays of hard disks that perform the same function.

DISTRIBUTED DATABASE — Also called "replicated database," this is a technique for storing a single database on several different computers at the same time, for improved performance and increased reliability in the event of a system or network failure. In distributed database systems, updates on one server get propagated to others in a timely fashion, so that all users see a consistent database picture. Several manufacturers, notably InterBase, INGRES, and ORACLE7, claim their data servers can be configured as distributed database systems.

DANIEL MILES KEHOE is a contributing editor for NeXTWORLD and an associate with the consulting firm Marble Associates. He can be reached at kehoe@nextworld.com. SIMSON L. GARFINKEL is a senior editor at NeXTWORLD. He can be reached at simsong@nextworld.com.

More Adapters on the Way

In addition to the DBKit adapters bundled in NEXTSTEP or currently shipping from third parties (see the sidebar, "Vying for Pole Position"), developers are opening the door to other leading database systems. If you need to connect with a database that is not listed, you can contact NeXT and request its monthly publication, the *NeXT Database Kit Adapter Availability Guide*, which is a current list of all known adapters available and under development.

If you cannot get an adapter for a database that's currently in use, you have two choices: develop your own (or pay for a third party to develop an adapter for you), or migrate to another database.

ADABAS RDBMS

A DBKit adapter is under development for use with Software AG's mainframe ADABAS data server, which is used for applications requiring high transaction volumes and ad hoc queries of large volumes of data.

Proxima, 1000 Wilson Blvd. #2403, Rosslyn, VA 22209.

AS/400 DB MANAGER

A DBKit adapter is under development for use with IBM's AS/400 DB Manager data server.

Xexos Computing, 1 New Concordia Wharf, Mill St., London SE1 2BA United Kingdom. 44/71/237-4535; mark@xexos.com.

CINCOM SYSTEMS SUPRA

A DBKit adapter is under development for this RDBMS for production-oriented transaction processing.

Cincom Systems, 4605 Duke Dr. #800, Mason, OH 45040. 513/573-3434.

DBASE AND PARADOX

A DBKit adapter for dBase and Borland Paradox files, popular on PC platforms, is under development.

Ronald C. Anton, ABCComputers, 306 Thayer St. #123, Providence, RI 02906.

FAIRCOM DB

A DBKit adapter for the Faircom DB system, popular on PC platforms, is under development by Anderson Financial Systems.

Anderson Financial Systems, 909 Sumneytown Pike #207, Springhouse, PA 19477. 215/653-0911, 800/237-8723; greg@afs.com.

FLAT-FILE DATA

A DBKit adapter in beta allows developers to access rows and columns in ordinary text files.

Harvard Toolworks, 91 Ann Lee Rd., Harvard, MA 01451. 508/772-4420; whs@magdalen.dmc.com.

IXADAPTER

IXadapter is a DBKit adapter in development that allows developers to access files managed by NEXTSTEP's Indexing Kit.

VNP Software, 10 Gardner Rd., Ste. A, Cambridge, MA 02139. 617/661-4292; ixadapter_info@vnp.com.

INFORMIX-SE

According to research firm Dataquest, Informix followed Sybase, Ingres, and Oracle the leaders in the RDBMS market, with 12 percent of all licensing revenue in 1992. A DBKit adapter has been developed by Informix Germany, but plans for marketing the adapter have not yet formalized between NeXT and Informix U.S.

Informix Software GmbH, Oskar Messter Str. 25, 85737 Ismaning, Germany. 49/89/96.09.80; alexk@infmuc.informix.com.

ITASCA ODBMS

A DBKit adapter is now in beta for this popular object-oriented database-management system.

Itasca Corporation, 7850 Metro Pkwy., Minneapolis, MN 55425. 612/851-3155; miezwa@itasca.com.

ODBC

A DBKit adapter for ODBC-compliant data servers, including Oracle, Sybase, Ingres, and Informix, is under development.

NeXT, 900 Chesapeake Dr., Redwood City, CA 94063. 415/780-3999; felix_lin@next.com.

UNIDATA RDBMS

A DBKit adapter is under development for use with the UniData RDBMS running on hardware platforms from nearly 30 different system manufacturers. The UniData RDBMS uses a unique "nested" relational data structure that is said to improve database performance and allow use of multivalued attributes and storage of arrays.

Pencom Software, 9050 Capital of Texas Hwy. #300, Austin, TX 78759. 512/343-6666; sable@pencom.com.

THE

Varic

MULTIPLE USER
LOCKING · DATA
· MULTIPLE WI
DEPENDENT PA
DEFINABLE LAB
FLEXIBLE AN
DATABASE DESI
DATABASE CO
EXPORT/IMPO
PUBLISHING WI
MIF MERGE · FU
FEATURES · INFO
AND SYBASE S

ALEMBIC SYSTEMS INC.
14 INVERNESS DRIVE
ENGLEWOOD
800.452.7608 • 303
INFO@ALEM

QI

No

Now wit

- Higher recalculations
- file access speed
- Cell styles for each
- worksheet layout
- Improved database
- including autonum
- type conversion
- Cell range drag
- faster worksheet
- Excel® file import

Xanthus

P.O. Box 20161, S-161 02
Phone +46-8-635 30 00 Fax
xanthus@xanthus.se

tly shipping from
 ers are opening the
 with a database that
 cation, the NeXT
 all known adapters

 in use, you have two
 adapter for you), or

 s mainframe
 h transaction vol-

 DB Manager

 2BA United King-

 ction-oriented

 573-3434.

 n PC platforms, is

 ce, RI 02906.

 rms, is under devel-

 ighouse, PA 19477.

 olumns in ordinary

 72-4420;

 pers to access files

 617/661-4292;

 a, Ingres, and Oracle,
 ng revenue in 1992.
 plans for marketing
 t U.S.
 ing, Germany.

 database-manage-

 5. 612/851-3155;

 acle, Sybase, Ingres,

 0-3999; felix_lin@

 i RDBMS running on
 rers. The UniData
 is said to improve
 and storage of arrays.
 X 78759. 512/343-

THE KEY TO MULTI-USER FLAT FILE/SQL DATABASE




VarioData

MULTIPLE USERS WITH RECORD LOCKING • DATABASE PASSWORD • MULTIPLE WINDOWS • USER-DEPENDENT PASSWORDS • FREE-DEFINABLE LABELS • LISTBOX • FLEXIBLE AND SAVEABLE DATABASE DESIGN • MULTIPLE DATABASE CONVERSION • EXPORT/IMPORT • DATABASE PUBLISHING WITH FRAMEMAKER MIF MERGE • FULL DRAG & DROP FEATURES • INFORMIX, ORACLE, AND SYBASE SQL SUPPORTS.


 ALEMBIC SYSTEMS INTERNATIONAL LTD.
 14 INVERNESS DRIVE EAST, SUITE G-228
 ENGLEWOOD, CO 80112
 800.452.7608 • 303.799.1435 FAX
 INFO@ALEMBIC.COM

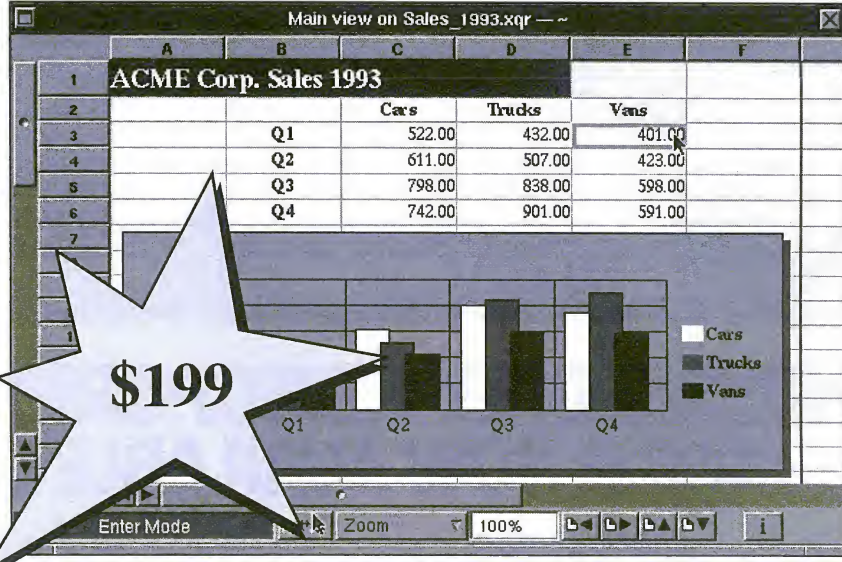
©1993 YUM YUM SOFTWARE. ALL RIGHTS RESERVED.
 DESIGN BY Q2 IMAGE & ADVERTISING

Questor™ 2.0 is Here!

Now special introductory offer: Try it for only \$199!


Now with:

- Higher recalculation and file access speed.
- Cell styles for easier worksheet layout.
- Improved database access, including automatic data-type conversion.
- Cell range dragging for faster worksheet design.
- Excel® file importing.



Still with:

- State-of-the-art NEXTSTEP user interface.
- Multi-level undo of all commands.
- Powerful QScript scripting language.
- 1-2-3® file importing and exporting.
- Seamless SQL database access through the Database Kit in NEXTSTEP.




P.O. Box 20161, S-161 02 Bromma, SWEDEN
 Phone +46-8-635 30 00 Fax +46-8-98 70 67
 xanthus@xanthus.se

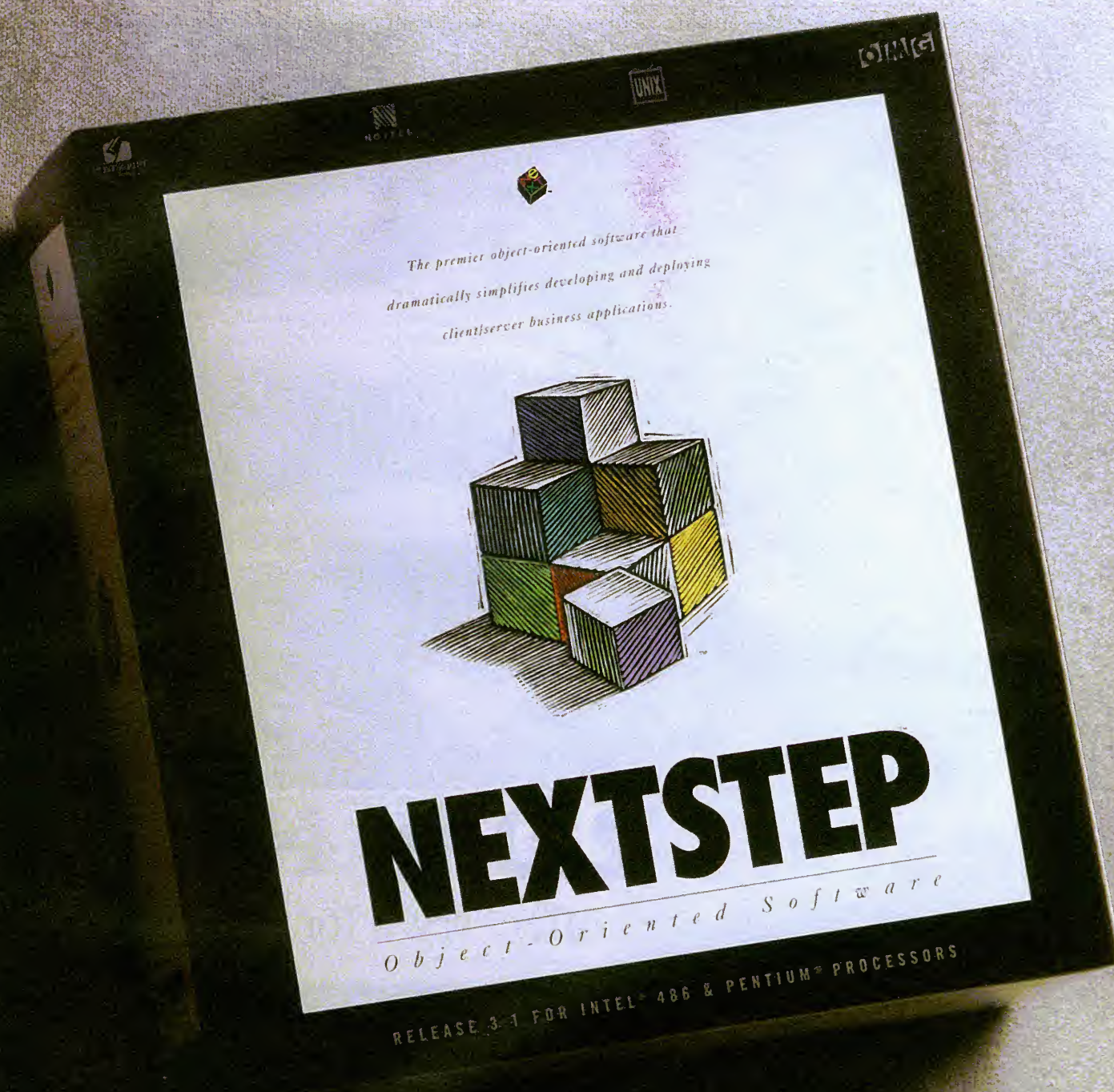
Normal retail price is \$595.
 Academic special price is \$99. Shipping not included.
 Offer only valid until Nov 30, 1993 for one 1-user license.
 Free upgrade offered to owners of Questor 1.0.

1-2-3® is a registered trademark of Lotus Development Corp.
 Excel® is a registered trademark of Microsoft Corp.

Circle 76 on reader service card

Distributed in the U.S. by
 Alembic Systems International Ltd.
 14 Inverness Drive East, Suite G-228
 Englewood, CO 80112
 800.452.7608 • 303.799.1435 fax
 info@alembic.com





THE WORLD'S ONLY OBJECT-ORIENTED SYSTEM SOFTWARE IS NOW AVAILABLE IN THIS BOX.

Byte Magazine said it's "...probably the most respected piece of software on the planet." Business Week said that it's "...years ahead of its potential rivals, such as Microsoft Corp.'s Cairo..." NEXTSTEP™ for Intel® 486 and Pentium® Pro-

cessors is the worlds' first object-oriented system software.

Now it's here. Polished and perfected. Shrink-wrapped and shipping. In user and developer versions. For desktop and portable systems.

It's available pre Digital, Epson, NEC other leading PCs o Call us at 1-800-

©1993 NeXT Computer, Inc. All rights reserved. NeXT, NEXTSTEP, the NeXT logo and The Object Is The Advantage are trademarks of NeXT Computer, Inc. All other trademarks mentioned belong to their respective owners. Business Week, January 25, 1993 reprinted with permission. Byte Magazine, October 1992 reprinted with permission.

DELL*1-800-374-1956***COMPAQ***1-800-TRY-NeXT***HEWLETT
PACKARD***1-800-TRY-NeXT***digital***1-800-438-4316 Ext. BDV***EPSON***1-800-BUY-EPSON***NEC***1-800-374-8000***Data General***1-800-DATAGEN***AT&T****NCR**An AT&T Company*1-800-TRY-NeXT*

OR IN ANY OF THESE BOXES.

BOX.

system software.
Shrink-wrapped
ns. For desktop

It's available pre-installed in PCs shipping from Dell, Digital, Epson, NEC and Data General. It's available in other leading PCs or separately from certified resellers. Call us at 1-800-TRY-NeXT for more information

about NEXTSTEP software, ordering preconfigured PCs or the name of a NEXTSTEP reseller near you.



It's clearly the most advanced software you'll find anywhere. And now you can find it everywhere.

THE OBJECT IS THE ADVANTAGE.™Circle 63 on reader service card

These days, it's difficult telling the NeXT third-party community from a neighborhood in Sarajevo. Companies that were among the most promising of developers – RightBrain Software, Adamation, Appsoft – have been reduced to little more than empty offices with answering machines. Others have taken their wares to other platforms, like refugees seeking safer ground.

Over the past month, I've spoken with dozens of NEXTSTEP developers around the world. Most are saying the same thing: The last six months have been one long waiting game, which will be over once NeXT ships Release 3.2, Portable Distributed Objects, and the port to PA-RISC. If they can make it through the winter, they'll taste the sweet rewards next spring.

Well, yes, the NEXTSTEP marketplace is going to revive, but developers shouldn't expect it to return in the same form as it was in January 1992. It's going in a fundamentally new direction.

The successful NEXTSTEP developers of the future will be those who provide applications that developers at firms like Chrysler Financial and McCaw Cellular can easily incorporate into their own custom apps.

Some of the most successful third-party developers have been doing this all along. Take Athena Design's Mesa spreadsheet. Mesa's powerful API lets developers run the program from their own applications. They can stuff data into a Mesa spreadsheet, have the program perform calculations, and get results. Or they can use Mesa to generate reports from their own data. Or they can use Mesa's AddIn feature to supplement Mesa's built-in functions with their own custom analytics.

NeXT's distributed-object system makes it a cinch to add APIs to most NEXTSTEP applications. Even a simple API can really make a difference

to an enterprising third-party or corporate developer. Take NeXT's own Mail program. It has an API that allows programmers to open Send windows; set the To, Subject, and Cc fields; set the body of the message; and programmatically click the Deliver button. That's how programs like NewsGrazer, DataPhile, Concurrence, and Pencil Me In open up a mail message to send in a bug report. The programmers who wrote those apps didn't have to waste their time reimplementing NeXTmail's Send window.

So where is the API that lets me open NewsGrazer to a particular article, programmatically add records to a DataPhile database, create presentations in Concurrence, or scan the appointments in a Pencil Me In calendar?

They're all either missing, under development, or undocumented.

The same is true for NeXTmail's API, which lacks documentation. Likewise, I saw Steve Jobs demonstrate PasteUp's API once at a Seybold conference, but I never saw any mention of it in RightBrain's manuals.

I wonder how many other applications have secret, hidden APIs, just waiting to be exploited. And how many more could have them if a developer had just spent a few extra hours at the keyboard?

Developers, get with it: Your current customers might ask if you have an API, but the ones you are losing are the ones who aren't even considering your programs, because they can't see how to mold it into the corporate future they're building. On the other hand, if you are prepared to work with your existing and prospective customers to make your application work in their environments, then there is a road out of Sarajevo. ♦

SIMSON L. GARFINKEL explores technology issues each month.

Good Morning, Sarajevo!

SIMSON L. GARFINKEL

There ought to be a contract upwards

The ever-increasing cost of a real problem: because a successful contractor requires programming about, for example

NeXT must focus enough of these skilled Object•Enterprise employees for lack of oil. H

Programmers' group is critical because in most cases to NEXTSTEP program consultant we know full work load. While the 250-percent NEXTSTEP market casting for 1994?

The registered defined bundle of software program, a promising customers converting on training that is o

To recruit and train in computer-program College campuses in

NeXT AND HEWLETT-PACKARD DELIVER THE POWER OF OBJECT-ORIENTED SOFTWARE

Financial services is an industry in which time is critically important. Here, where every second can mean the difference between profit and loss, some companies have already harnessed the power of software objects in select departments to stay ahead of rapidly changing markets.

Now NeXT and Hewlett-Packard together offer a suite of business solutions that spread this power throughout the entire enterprise.

ANNOUNCING OBJECT•ENTERPRISE.

Object•Enterprise combines the strengths of two technology leaders to offer what no one company can: a unified enterprise-wide information system based entirely on object-oriented software.

In a time-conscious business such as a brokerage firm, this type of system offers an irrefutable advantage. Because it allows a new generation of financial applications to be developed and deployed at every level of the organization—with radically greater speed.

Object•Enterprise brings NEXTSTEP™ software to a full spectrum of Hewlett-Packard hardware, from PCs to workstations, with full support for NEXTSTEP objects on business servers. The result is a seamless and scalable system that offers a true competitive advantage.

NEXTSTEP: "...PROBABLY THE MOST RESPECTED PIECE OF SOFTWARE ON THE PLANET."

The opinion is from *Byte Magazine*. The fact is, NEXTSTEP is without rival as the only shipping object-oriented user and development environment.

Many Wall Street traders are already reaping the benefits of this technology, deploying complex custom applications in months instead of years.

That's because NEXTSTEP allows applications to be constructed in a modular



ke NeXT's own
o open Send win-
he message; and
grams like News-
up a mail message
those apps didn't
nd window.
o a particular arti-
ase, create presen-
cil Me In calendar?
3, under develop-

NeXTmail's API,
on. Likewise, I saw
?asteUp's API once
but I never saw any
ain's manuals.
other applications
, just waiting the be
y more could have
st spent a few extra

it: Your current cus-
are losing are the
e they can't see how
the other hand, if
ective customers to
there is a road out

y issues each month.

N E X T I N K

There ought to be a flyer in the NEXTSTEP Developer box that reads like this: "Some Assembly Required. Skilled NEXTSTEP contractors not available for purchase, but may be rented for upwards of \$100/hour – if you can find them."

The ever-increasing price of NEXTSTEP programmers is a symptom of a real problem: demand is outstripping supply. This is a critical issue, because a successful NEXTSTEP solution depends on reasonably priced skilled contractors. Further, custom solutions in NeXT's target markets require programmers, trainers, and integrators who are knowledgeable about, for example, telecommunications or financial services.

NeXT must foster the creation of enough of these skilled personnel or the Object•Enterprise engine will grind to a halt for lack of oil. Here is a status report.

Programmers/Consultants. This group is critical because it takes a full year in most cases to create a competent NEXTSTEP programmer. Every skilled consultant we know of has essentially a full work load. Who is going to service the 250-percent growth in the NEXTSTEP market that NeXT is forecasting for 1994?

The registered consultant program is a good start; there is finally a defined bundle of services that support independents. NeXT's mentoring program, a promising initiative, gives active on-site tutelage to corporate customers converting their in-house staffs. Still, consultants get a discount on training that is only half that of third-party developers.

To recruit and train more programmers, NeXT should spread the word in computer-programming journals. Do direct mail to lists of programmers. College campuses might yield a strong crop in future years if courses in

NEXTSTEP programming are followed by a strong internship program.

Integrators. Companies like Pencom, Systemhouse, and Peat Marwick are bright spots for NeXT. They get large sites up and running, providing them with a wide range of consulting services. At any one time, it seems that each has about a zillion openings for experienced NEXTSTEP workers of all stripes. To service the range of customers and customer budgets that will come into being over the next few years, the base of integrators must be broadened significantly.

NeXT has taken an important step with the creation of special sales channels to support small integrators, dealers, and the like. This addresses

sales issues, but the real need here is for detailed technical knowledge and support. If a car carrying all the people who really understand how to deal with complex device driver issues had an accident on the way to get pizza, NeXT would be having an auction at headquarters instead of the factory. Somehow the real high-end knowledge must be shared in an effective manner.

Training. NeXT has been excellent on this front, with a long-term strategy for building infrastructure by training third-party trainers. It's important for this trend to continue. Give third parties the heart of the business rather than cherry picking the market for NeXT-branded courses.

The alarm bells are ringing now. Continued NEXTSTEP sales depend on successful installations, and that depends on a ready pool of qualified consultants, integrators, and trainers. ♦

DAN LAVIN *comments on business issues in NeXT Ink.*

Some Assembly Required

DAN LAVIN

HEWLETT-PACKARD NOW OBJECTN AN ENTERPRISE-WIDE SCALE.



fashion, using software objects as building blocks. These objects, easily re-used and maintained, take the place of complicated and error-prone computer code.

While the rest of the computer industry is still years away from implementing an object-oriented system, NEXTSTEP is here today. Polished and perfected in its third release

AN OBJECTIVE POINT OF VIEW, FROM DESKTOP TO DATA CENTER.

Hewlett-Packard has long led the drive toward interoperability and object computing, offering a scalable hardware architecture from client desktop to the enterprise-wide data center.

With a family of products including Intel® 486-based Vectra PCs, PA-RISC workstations and business servers, Hewlett-Packard delivers leading technology at all levels. Along with quality engineering and rock-solid service and support.

By joining in Object•Enterprise with NeXT, Hewlett-Packard is redefining the level of performance you can expect from an advanced trading system. And its industry-standard hardware provides the assurance that Object•Enterprise will integrate seamlessly with your existing investments.

SEE HEWLETT-PACKARD AND NeXT. NOW IN CONCERT.

Object•Enterprise gives you one point of contact to tap the collective power of Hewlett-Packard and NeXT. And we do encourage you to make contact.

Call us at 1-800-TRY-NeXT for more information, and to reserve seats at one of the Object•Enterprise Seminars scheduled in New York, Chicago and San Francisco throughout the summer.

We think it will be a day well spent. And we're keenly aware of how valuable your time can be.

**HEWLETT
PACKARD**

Circle 99 on reader service card

E-mail, E-mail Everywhere

Two new packages offer a host of mail connectivity options, from simple dial-up to UUCP

by SETH ROSS

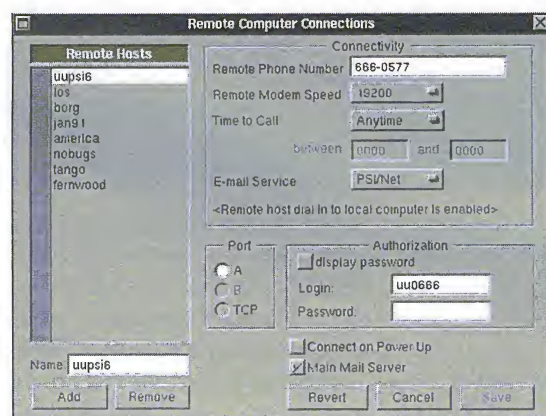
Built on a raft of UNIX tools, NEXTSTEP is a natural platform for dial-up communications. Unfortunately, the promise often falls short when users and administrators face the challenges of setting up UUCP (Unix-to-Unix-Copy) connections to other systems or retrieving e-mail from a remote site. Two new products, Connect It! from Black Market Technologies, and Transfer from Pinnacle Research, help you to set up and maintain hassle-free communication links.

UUCP made easy

When we first described the vagaries of setting up a UUCP connection to get Internet mail ("Linking Into the Internet," Fall 1991), we bemoaned the lack of NEXTSTEP configuration tools for managing the process. Two years later, Black Market Technologies has delivered one solution.

Many NeXT sites use the UUCP facility to handle their dial-up e-mail connections. Once configured, UUCP reliably dials out to other UNIX systems to send and pick up e-mail. But configuration is a bugaboo. The UUCP configuration files included with NEXTSTEP look like they were written by graduate students back when bell bottoms and platform shoes were still popular. Even experienced system administrators can spend hours setting up UUCP connections: hacking on the text files L.sys, L-devices, and the dreaded sendmail.cf; checking and changing file permissions; and wading through modem settings.

Connect It! can dramatically re-



Connect It! simplifies configuring a UUCP connection to an Internet mail server.

duce the time needed to configure UUCP, remote dial-in services, and modems. It's a no-brainer: Enter your mail domain name, modem type, and speed in the Local Host Configuration panel. Save. Enter the name, number, login, and password of the system to which you want to connect in the Remote Host Configuration panel. Save. Connect It! handles the rest, from modifying the L.sys file to initializing the modem.

There are some important provisos: Connect It! works best with virgin systems. When we tried to

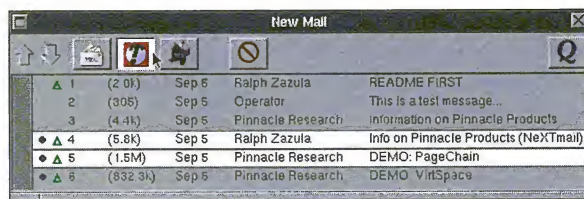
Connect It! 1.0.1



This UUCP front end greatly simplifies the task of setting up UUCP and e-mail connections. Despite its inability to handle pre-existing connections, Connect It! makes a valuable addition to the NEXTSTEP system administrator's toolbox.

\$145

Black Market Technologies, 200 Warren St. #2, Brooklyn, NY 11201. 718/522-5090; 718/852-4249 fax; connect-it@bmt.gun.com.



Transfer allows you to choose which new mail messages to transfer from a remote mail server to your local machine.

configure a NeXT cube that already had several up-and-running UUCP connections, we found that Connect It! mauled our pre-existing L.sys entries and sendmail.cf file. Once we deleted the broken remote-host entries and set them up again using the software, the system worked fine.

The version (1.0.1) of Connect It! we tested had a few bugs and some interface problems. The Preferences submenu item was inexplicably grayed out. The Utilities panel is poorly implemented: Instead of providing feedback on the status of running connections, it waits until the session is through before displaying the relevant log files. The app needs a dial directory, or an easy way to initiate UUCP sessions. In addition, it should provide tools to work on the chat scripts necessary to initiate a connection to a remote system.

Connect It! has the category of UUCP front ends all to itself. Despite its limitations, it is valuable for anyone who wants to painlessly and quickly set up UUCP-based e-mail connections and a must for those who manage e-mail gateways. By reducing the time needed to set up UUCP connections from hours to minutes, Connect It! quickly pays for itself.

Transfer (beta)



This e-mail and file-transfer utility makes it easy to keep up with your office e-mail from home or on the road.

\$249

Pinnacle Research, 4725 E. Sunrise Dr. #435, Tucson, AZ 85718. 602/529-1135; 602/529-0117 fax.

Pick and choose

While UUCP is the standard way to transfer e-mail between systems, a simpler solution is sometimes necessary: What if you're away on

travel with a laptop or working on a stand-alone home machine? You could set up a UUCP connection, but this takes time and resources on both ends.

Transfer allows remote users to retrieve NeXTmail from a mail server without using UUCP. We evaluated a late beta version of Transfer and found it surprisingly handy. It uses your modem to dial into the mail server and request information about mail messages you've received. You view the header listings of your messages (date, sender, size, and subject) in the New Mail panel, which looks similar to the one in the NeXTmail application. Select the messages you want and Transfer will send them to your local NeXT mailbox. This method of e-mail retrieval is efficient: You can pick and choose which messages get transmitted locally, saving on valuable phone time.

Transfer transparently handles outgoing mail as well. You can set up Transfer to intercept outgoing messages composed in NeXTmail and forward them via modem. This is as easy as pressing the Deliver button in NeXTmail. The app has separate modules for issuing commands and transferring files, but these were not complete at the time of this review.

For streamlined access to remote mail, Transfer is the only commercially available option. This promising app should prove valuable for users who need a simple path to e-mail from afar. ♦

SETH ROSS is a NeXTWORLD contributing editor and an author, with Daniel Miles Kehoe, of Taking the NeXT Step—The Buyer's Guide to NEXTSTEP Computing.

Dots

Print from to a host of

by SIMSON L.

When their hardware had the expensive printers, inexpensive because the processing happened inside and the printer was the input device. But now, in the processor world, users must choose each printer they want, and each printer they want costs a lot. PostScript engines are expensive, and these individual programs are expensive unless the user has Dot from Hamburg, Germany. d'ART Computersystem

Internal RIP

Dots is a printer driver for NEXTSTEP's built-in I Script as a RIP (raster image) to generate bit maps for Script printers. This is useful for black-hardware owners who have a printer other than the branded devices. Using I print with PostScript or ink-jet printers, break the 600-dpi LaserJet barrier. 600-dpi LaserJet IV, or 1 to that Cadillac of printers: Color Laser Copier (CL). Why use Dots, rather than purchasing a PostScript



Resolution clearly differs in size (left), 300-dpi HP DeskJet Plus

Pick and choose
While UUCP is the standard way to transfer e-mail between systems, a simpler solution is sometimes necessary: What if you're away on top or working on the machine? You need a UUCP connection, time and resources

allows remote users to pull mail from a mail server using UUCP. We evaluated a number of Transfer and Fetch programs. They are all handy. It uses a dial-up connection to the mail server to get information about the messages you've received. You can see listings of your messages, their size, and subject. The Mail panel, which is the one in the foreground, allows you to select the messages you want to transfer. You can also transfer to your local NeXTMail mailbox. You can pick and choose which messages get transferred, saving on valuable

space. It transparently handles outgoing mail as well. You can set up outgoing mail to be sent through a modem. This is useful if you're using the Deliver utility. The app has separate windows for issuing commands, viewing files, but these were not the time of this

limited access to remote systems is the only commercial option. This promise to prove valuable for a simple path to the

is a NeXTWORLD editor and an author, Les Kehoe, of Taking the Buyer's Guide to Computing.

Dots Enough

Print from your NEXTSTEP machine to a host of non-PostScript printers

by SIMSON L. GARFINKEL

When there was black hardware, NeXT users had the luxury of inexpensive NeXT-brand printers. They were inexpensive because the PostScript processing happened inside the NeXT and the printer was merely an output device. But now, in the Intel-processor world, users must pay to equip each printer they want to use with costly PostScript engines — NEXTSTEP lacks appropriate drivers for these individual programs. That is, unless the user has Dots, a program from Hamburg, Germany-based d'ART Computersysteme GmbH.

Internal RIP

Dots is a printer driver that uses NEXTSTEP's built-in Display PostScript as a RIP (raster image processor) to generate bit maps for non-PostScript printers. This is useful even for black-hardware owners who want a printer other than the old NeXT-branded devices. Using Dots, you can print with PostScript on low-cost ink-jet printers, break NeXT's 400-dpi Laser Printer barrier with HP's 600-dpi LaserJet IV, or print directly to that Cadillac of printers, the Canon Color Laser Copier (CLC) 500.

Why use Dots, rather than simply purchasing a PostScript cartridge

for your laser printer? For starters, the cost of Dots is often less than the cost of a PostScript cartridge and the extra memory required to upgrade most laser printers to full PostScript-printer status. Because Dots runs on the NEXTSTEP computer, rather than the printer, you have access to all of your fonts without having to specifically download them or include them in your document. And considering that Dots uses your computer's virtual-memory system, you'll always have enough memory to print even the most complex PostScript pages.

Dots also opens up the exciting world of low-cost desktop color for under \$1000, thanks to printers such as the HP DeskJet 550C. For those with a higher budget, Dots supports the Canon CLC 10, a desk-sized color printer that doubles as a scanner. (d'ART ships Dots with a complementary scanning program for the CLC 10.)

Dots supports an astounding number of printers, including most HP black-and-white and color ink-jet printers (including the DeskJet Plus, 500, 500C, 550C, 1200C, PaintJet XL, XL300, DesignJet 600, and 650); the Canon BJ-300/330 and BJ-10 bubble-jet printers; Canon's CLC 10, 300, and 500 copiers; all HP LaserJet II, III, and IV laser printers;

the Seiko PhotoMaker CH-6104 dye-sublimation printer; and the Mitsubishi Shinko dye-sublimation printer. The program can print through the parallel, serial, or SCSI ports (providing that your printer has a matching port).

Version 3.4.1 will print on all of these printers

Dots 3.4.1



Dots lets you print from any NEXTSTEP computer to a wide variety of non-PostScript printers using NEXTSTEP's built-in Display PostScript interpreter. Unless you print through the SCSI port, speed could be a problem.

\$149 for monochrome printers; \$220 for HP DeskJet 500C and 550C; \$499 for HP DeskJet 1200C and PaintJet XL300; \$1035 for Canon CL10; \$1495 for Canon CLC300 and CLC500

d'ART Computersysteme GmbH, Virchowstraße 17-19, 22767 Hamburg, Germany. 49/40/38.02.30. In the United States, Alembic Systems International, 14 Inverness Dr. E., Ste. G228, Englewood, CO 80112. 303/799-6223; 800/452-7608; info@alembic.com.

out of the box in demo mode (printing a thick black line diagonally through each page), allowing you to test it with your particular printer before plunking down your money. The program is internationalized in both English and German and works with both white and black hardware (with white hardware, you must purchase an additional "printing license" from NeXT to be legal; see "Adobe levies PS tax," *NeXTWORLD Extra*, October). Although the program lacks a user manual, there is extensive on-line help.

We tested Dots with an HP DeskJet Plus (a 300-dpi ink-jet printer), HP DeskJet 550C (a color ink-jet), and HP LaserJet IV (with a resolution of 600 dpi).

Setup and installation

Dots is delivered on a floppy disk containing a single Installer package, which must be installed as root. Part of the installation process deposits an application called **Dots.app** into your **/LocalLibrary** directory, which is the Dots installation and license-management application. Run the program to tell Dots which printers you have, how they are connected (parallel, serial, or SCSI), and enter one or more printer-license strings. Dots can handle as many printers simultaneously as you can connect to your computer.

It took less than five minutes to install Dots on both a monochrome NeXTstation and an Epson NX, each running NEXTSTEP 3.1. (Although we did spend two hours fooling with the NX, trying to get NEXTSTEP

to recognize the computer's built-in parallel-interface adapter.) Once running, the driver performed flawlessly, rendering any PostScript page on the selected printer.

Unlike NEXTSTEP's built-in printer driver, you can make Dots display a special pop-up panel before each print job that lets you set the particular job's characteristics. The panel controls output options (the intended resolution, paper feed, and number of copies), render options (transfer function, brightness, halftone screen, and color depth), as well as options that are printer-specific.

But unless you are printing through a SCSI interface, or at low resolutions, you may find performance with Dots to be disappointing. A 13-page test document that took 1 minute, 57 seconds to print on a NeXT Laser Printer took 8 minutes, 30 seconds to print on the 600-dpi HP LaserJet IV through the Epson's parallel port. On the other hand, Dots never put a noticeable load on the system.

Conclusion

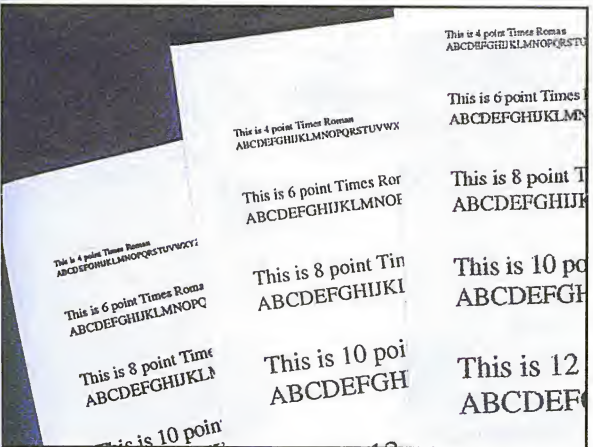
Is Dots enough? Once it's installed, Dots is easy to forget. Like the best NEXTSTEP software, it just works, whether you are printing from the local computer or over the network.

With low-end printers, Dots is a real pleasure to use. Certainly, it's the cheapest way to bring low-cost color printing to the NEXTSTEP desktop. And with the quality of ink-jet printers rivaling that of 300-dpi laser printers, some organizations might prefer the flexibility of putting an ink-jet printer on every desktop instead of installing central laser printers.

Unfortunately, for people used to the speed of a NeXT Laser Printer, Dots with a parallel interface is a poor substitute. We found it downright frustrating to wait for the LaserJet IV to output its pages, even if they were printed at 600 dpi.

Still, the printing speed is that fault of the hardware, not Dots. If you've got the time, d'ART has the data. ♦

SIMSON L. GARFINKEL
is a NeXTWORLD senior editor.



Resolution clearly differs in samples from the 400-dpi NeXT Laser Printer (left), 300-dpi HP DeskJet Plus (center), and 600-dpi HP LaserJet IV.

Looking Good

New image-manipulation apps bring Photoshop features to NEXTSTEP

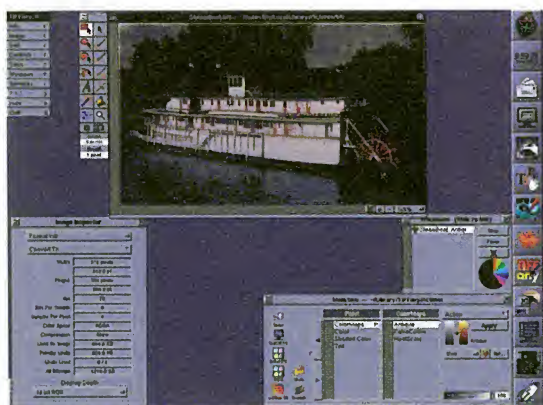
by RICK REYNOLDS

A year ago, image processing appeared to be NEXTSTEP's most crowded applications category. With products like Appsoft Image, Retouche, and 1VISION coming to market, a multitude of developers were vying for the lucrative niche that Photoshop occupies on the Macintosh platform.

Since then, as NeXT has moved away from the publishing market in favor of large corporate customers developing custom applications, some of the image-processing developers have backed off. But new programs from smaller NEXTSTEP developers have stepped in to fill the void. TIFFFany II (the first version we have looked at here) from benchMark Development and WetPaint from Pinnacle Research is at a slightly different point in the continuum. This simpler program is less powerful than TIFFFany from a workflow perspective, because you can't move as many large images through at the same time, but it is better thought out on the interface level than other image-

TIFFFany II

TIFFFany is an image-manipulation program in the tradition of market leader Photoshop. Using it, you can do almost all the things you can do in Photoshop – as well as a few things you can't do with the Adobe product.



The Processes panel shows the task in progress, the available hard-disk space for virtual memory, and a progress wheel as TIFFFany II applies a color-mapping filter to create an antique effect on this scanned image.

TIFFFany II

TIFFFany is a midrange image-editing application that works well with large image files. Extensive image-manipulation tools, including morphing and some animation tools. TIFFFany accepts custom tools through a programmer's API.

\$695; \$145 upgrade for users of TIFFFany 1.x; \$245 educational; \$75 educational upgrade

benchMark Development, 2040 Regency Rd., Ste. C, Lexington, KY 40503. 606/255-3864; info@bmd.com.

For example, the Processes panel shows you what TIFFFany is doing to your image at all times. You can pause or stop actions, perform multiple actions at once, monitor their progress, and continue working with TIFFFany during the most powerful operations. You can even open and save images and perform operations on several images all at exactly the same moment.

An inspector panel shows a lot of information about your image. A toggle switch in the panel gives you the useful ability to view your image in 32-bit color, 16-bit color, 8-bit gray and 2-bit gray at the click of a button. TIFFFany supports multiple levels of undo that can be set by the user. A nifty variation on image cloning brings up another view of the image useful for monitoring progress at a different resolution.

Besides these special features, TIFFFany sports all of the normal things you expect in image manipulation, such as contrast control, color adjustments, unsharp mask, and airbrushing tools.

While TIFFFany is no competition for Pixel Magician in

image file-format conversion, there are some useful options for RGB-to-CMYK TIFF conversion that even Baccus's Pixel Magician doesn't have. TIFFFany accepts TIFF, GIF, JPG, and EPS file formats.

While NeXTWORLD reviewed TIFFFany II in very late beta, we found the performance and reliability of the product to be of release quality. TIFFFany II will have built-in color separation like that of TIFFFany 1.5 when the final version arrives in November. TIFFFany II will be released in multiple-architecture-binary format and will include both paper and on-line documentation, according to the company.

WetPaint

WetPaint from Pinnacle Research is at a slightly different point in the continuum. This simpler program is less powerful than TIFFFany from a workflow perspective, because you can't move as many large images through at the same time, but it is better thought out on the interface level than other image-



The top image shows a scan of the motherboard of a NeXTstation with its original yellow battery. The middle image shows the scan with the battery retouched to a blue color. The bottom image shows the original scan with an easy-to-use ripple filter effect applied.

WetPaint 1.2

WetPaint is an easy-to-use image-editing application that should appeal especially to beginners but is suitable for many uses. WetPaint includes a large selection of filters and special effects. WetPaint accepts Compose In Color modules as well as custom tools through a programmer's API.

\$295; \$99 students; \$220 faculty, staff, and institution

Pinnacle Research, 4725 E. Sunrise Dr. #435, Tucson, AZ 85718. 602/529-1135; info@pri.com.

processing products we have seen. It is even fun to work with.

WetPaint is very easy to use, with a more Photoshop-like approach than TIFFFany (or Appsoft Image or Unter Ecker Software's Compose In Color.) It presents a very simple, can't-get-lost interface with great icons that help you remember where everything is. While Unsharp Mask is hidden away and called Edge Enhance in WetPaint, users will find it in the Filters panel. The Zoom filter does a great job of enlarging a TIFF without jaggies. The brushes, pencils, and airbrushes were very easy to adjust and use and worked quickly. Only the most complex filter operations proved to be slow, with a meter in the filters panel to show progress.

WetPaint is accessible to those who are not experts in image retouching. Even among those who are proficient with image-editing programs, this may be the preferred tool for those who want to touch up an image rather than do serious

color-correction work. While it isn't the production powerhouse of TIFFFany II, it is a very comfortable tool, and you can buy two copies of WetPaint for the cost of one copy of TIFFFany II.

WetPaint is shipping now. There is both on-line help and a paper manual, but the paper manual's illustrations are difficult to decipher, as the pages are merely duplicated laser output. But this is only a minor annoyance in an otherwise excellent product. ♦

RICK REYNOLDS is a contributing editor to NeXTWORLD and Publish magazines.

acts we have seen.
work with.
very easy to use,
toshop-like ap-
Fany (or Appsoft
Ecker Software's
or.) It presents a
't-get-lost interface
that help you
everything is.
Mask is hidden
Edge Enhance in
will find it in the
e Zoom filter does
larging a TIFF
The brushes, pen-
hes were very easy
e and worked
e most complex fil-
roved to be slow,
the filters panel to

accessible to those
verts in image
n among those who
ith image-editing
may be the preferred
ho want to touch
her than do serious
lor-correction work.
hile it isn't the pro-
ction powerhouse
TIFFFany II, it is a
ry comfortable tool,
d you can buy two
pies of WetPaint for
e cost of one copy
TIFFFany II.

WetPaint is ship-
ng now. There is
oth on-line help and
paper manual, but
e paper manual's
ustrations are diffi-
lt to decipher, as the
iges are merely
iplicated laser out-
it. But this is only a
ce in an otherwise
ct. ♦

N O L D S is a con-
to NeXTWORLD
magazines.

NEXTWORLD

1 Simply print your name, title, address and telephone number on the attached card. And answer the three questions.

2 Circle the numbers on the card that match the number at the bottom of the ads which interest you.

3 Mail this card today.
POSTAGE IS ABSOLUTELY FREE!

Information from Advertisers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Product Showcase Information

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

Please print clearly

Name _____

Title _____

Company _____

Address _____

City, State, Zip (required) _____

Country _____

Phone: (Area code/Number) _____ FAX _____

Information from Advertisers

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Product Showcase Information

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

Please print clearly

Name _____

Title _____

Company _____

Address _____

City, State, Zip (required) _____

Country _____

Phone: (Area code/Number) _____ FAX _____

FREE PRODUCT INFORMATION

A. Department you most often work in (please check one):

- ☐ 1) Accounting, finance or auditing
- ☐ 2) Administration or general management
- ☐ 3) Design or creative services
- ☐ 4) Education or training
- ☐ 5) Engineering
- ☐ 6) Manufacturing, production or operations
- ☐ 7) Marketing, promotion or communications
- ☐ 8) MIS/DP, tech. services or tech. documentation
- ☐ 9) Other

B. Computer you use at work or at home (please check all that apply):

- ☐ 10) IBM or compatible
- ☐ 11) Macintosh
- ☐ 12) NeXT
- ☐ 13) Sun
- ☐ 14) Other Unix workstation

C. Publication you read regularly (please check all that apply):

- ☐ 15) Business Week
- ☐ 16) Byte
- ☐ 17) Communications Week
- ☐ 18) Computer Reseller News
- ☐ 19) Computerworld
- ☐ 20) Forbes
- ☐ 21) Fortune
- ☐ 22) Infoworld
- ☐ 23) LAN Times
- ☐ 24) MacUser
- ☐ 25) Macweek
- ☐ 26) Macworld
- ☐ 27) Open Systems Today
- ☐ 28) PC Magazine
- ☐ 29) PC World
- ☐ 30) Personal Workstation
- ☐ 31) Publish
- ☐ 32) SunWorld
- ☐ 33) Unix Review
- ☐ 34) Unix World
- ☐ 35) Wall Street Journal

☐ Check here for a one-year subscription to NeXTWORLD. \$29.95/year for 12 monthly issues a year. For Canada add \$15 (includes 7% GST tax). All other foreign orders must be pre-paid in U.S. funds only and add \$40 for airmail delivery or \$15 for surface mail delivery. DO NOT SEND CASH. Check or money order accepted. FAX: 1-615-377-0525 to charge Visa/MC.

NOVEMBER ISSUE

DECEMBER 24, 1993

S1

A. Department you most often work in (please check one):

- ☐ 1) Accounting, finance or auditing
- ☐ 2) Administration or general management
- ☐ 3) Design or creative services
- ☐ 4) Education or training
- ☐ 5) Engineering
- ☐ 6) Manufacturing, production or operations
- ☐ 7) Marketing, promotion or communications
- ☐ 8) MIS/DP, tech. services or tech. documentation
- ☐ 9) Other

B. Computer you use at work or at home (please check all that apply):

- ☐ 10) IBM or compatible
- ☐ 11) Macintosh
- ☐ 12) NeXT
- ☐ 13) Sun
- ☐ 14) Other Unix workstation

C. Publication you read regularly (please check all that apply):

- ☐ 15) Business Week
- ☐ 16) Byte
- ☐ 17) Communications Week
- ☐ 18) Computer Reseller News
- ☐ 19) Computerworld
- ☐ 20) Forbes
- ☐ 21) Fortune
- ☐ 22) Infoworld
- ☐ 23) LAN Times
- ☐ 24) MacUser
- ☐ 25) Macweek
- ☐ 26) Macworld
- ☐ 27) Open Systems Today
- ☐ 28) PC Magazine
- ☐ 29) PC World
- ☐ 30) Personal Workstation
- ☐ 31) Publish
- ☐ 32) SunWorld
- ☐ 33) Unix Review
- ☐ 34) Unix World
- ☐ 35) Wall Street Journal

☐ Check here for a one-year subscription to NeXTWORLD. \$29.95/year for 12 monthly issues a year. For Canada add \$15 (includes 7% GST tax). All other foreign orders must be pre-paid in U.S. funds only and add \$40 for airmail delivery or \$15 for surface mail delivery. DO NOT SEND CASH. Check or money order accepted. FAX: 1-615-377-0525 to charge Visa/MC.

FREE PRODUCT INFORMATION



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 859 PITTSFIELD MA

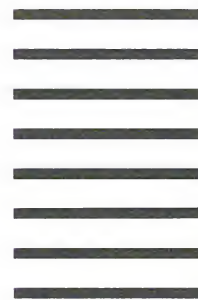
POSTAGE WILL BE PAID BY ADDRESSEE

NEXTWORLD

READER SERVICE DEPARTMENT
P.O. BOX 5068
PITTSFIELD MA 01203-9657



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 859 PITTSFIELD MA

POSTAGE WILL BE PAID BY ADDRESSEE

NEXTWORLD

READER SERVICE DEPARTMENT
P.O. BOX 5068
PITTSFIELD MA 01203-9657



NEXTWORLD

Box

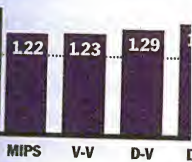
Dell 450 DE2/DGX



\$8297 (as configured)

Configuration
DX2/50; 32MB RAM
drive; 1120-by-832 1
graphics; 5 EISA, 1 J,
inch color monitor; C

NeXTWORLD benchmark



Performance
EISA makes for good
though the 50MHz pr
computations.

Video
The fastest NEXTSTE
mance yet tested, due
JAWS subsystem.

System design
Solid construction but
to some internal comp

CT
ON
NEXTWORLD

R E V I E W S

Box Score Developer

Dell 450 DE2/DGX

\$8297 (as configured)

Configuration

DX2/50; 32MB RAM; 668MB SCSI drive; 1120-by-832 16-bit JAWS graphics; 5 EISA, 1 JAWS slots; 21-inch color monitor; CD-ROM drive

NeXTWORLD benchmarks

1.22

1.23

1.29

1.37

100

0.96

118

MIPS

V-V

D-V

Disk

Webster

Compile

Performance

EISA makes for good throughput, though the 50MHz processor slows computations.

Video

The fastest NEXTSTEP video performance yet tested, due to customized JAWS subsystem.

System design

Solid construction but difficult access to some internal components. SCSI-

cable routing caused ribbon-cable damage.

NEXTSTEP orientation


Dell currently preinstalls NEXTSTEP only for orders of \$100,000 or more.

Support

One-year warranty, average documentation, toll-free phone support, 30-day money-back guarantee.

Value

High price tag as tested, but worth it with loaded options and JAWS video.



Contact

Dell Computer Corporation, 9505 Arboretum Blvd., Austin, TX 78759. 512/338-4400, 800/289-3355.

Box Score Developer

Logisys LG466NX/2

\$5266 (as configured)

Configuration

DX2/66; 32MB RAM; 525MB SCSI drive; 1024-by-768 16-bit Wingine graphics; 6 ISA, 1 LB, 1VLB slots; 17-inch color monitor

NeXTWORLD benchmarks

1.65

119

0.88

100

115

105

MIPS

V-V

D-V

Disk

Webster

Compile

Performance

Solid for an ISA machine; a VLB SCSI controller would speed real-world use.

Video

The jitter that we reported on an earlier version has been eliminated. Great video quality driving an average monitor; higher resolution would be nice.

System design

Solid construction and easy access to internal components. On the noisy side.

NEXTSTEP orientation


You must buy NS separately, though Lucky will install it for you for free. Unfortunately, the included docs read, "Your computer's OS is MS-DOS."

Support

One-year warranty, good documentation, phone support is not toll-free, no money-back guarantee.

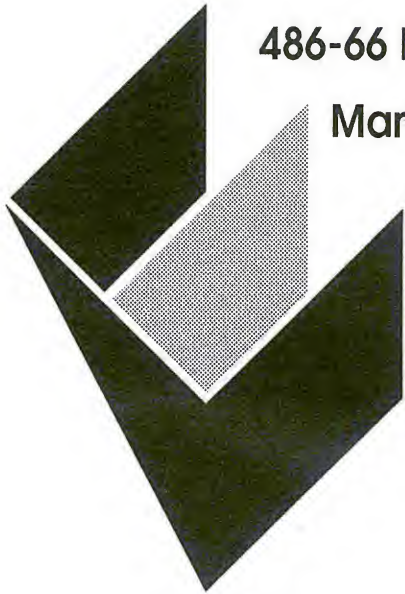
Value

Reasonable cost for strong performance and good video.



Contact

Lucky Goldstar Int'l (America), 4487 Technology Dr., Fremont, CA 94538. 510/657-2229, 510/657-3339 fax.



486-66 Pentium Compatible Computers

Manufactured Exclusively for NEXTSTEP™ Compatibility

Ultra-Fast Wingine™ Video

Trinitron™ Display Technology

eCesys

The Lowest-Cost NEXTSTEP Solution Available
800-732-3797 (800-7-eCesys)

Circle 23 on reader service card

"The Hands-Down Winner..."

-UNIXWorld Magazine

co-Xist X11R5 for NEXTSTEP



Access hundreds of X applications running on Sun, IBM, HP and DEC workstations with the most advanced X11R5 server available, co-Xist.

- The Most Complete Development & User Environments
- Customer Proven Robust Environment
- Fast Service & Toll-Free Support
- Accelerated Rootless Mode
- Screen Take-Over Mode
- Simplified GUI Installation
- Public Domain Tools & Utilities

See why co-Xist is hailed as "the most up-to-date and thorough X server." Call Pencom for details and a free demonstration copy. Available for NEXTSTEP 3.X on NeXT and Intel platforms.

PENCOM



A Leading Provider of Software Services Including Systems Integration, Applications Reengineering, Consulting, Staffing and Training

1-800-PENCOM-4
9050 Capital of Texas North
Austin, Texas 78759
tel: (512) 343-6666
fax: (512) 343-9650
co-Xist_info@pencom.com

Circle 51 on reader service card

Make or Buy?

Lighthouse Design's Diagram! 2, Concurrency, and TaskMaster are among the best NEXTSTEP applications on the market. Each shares a core set of object classes, which the company has now bundled in a commercial package called the Foundation Classes. We found them to be solid and bug free, though unspectacular in implementation.

The idea is that corporate sites can use the Foundation Classes to shave precious weeks off hectic development schedules. NEXTSTEP consultants can cost upwards of \$1000 a day, making these classes — which could probably be implemented by a competent programmer in just under a month, but without necessary real-world testing — a real bargain. But many sites with in-house development staffs, and many third-party developers, may find it difficult to justify Lighthouse's pricing structure.

Foundation Classes consist of 15 different classes: a string class, an error-reporting class, and a set of collection classes. It's a total of roughly 27,000 lines of source code that is surprisingly well commented, considering that these classes were originally developed for internal use. They're also extremely well tested — by more than 10,000 users — owing to their use in the company's flagship products.

FCString is a general-purpose string-manipulation class that automatically handles issues such as memory allocation for the programmer. This can be a real time saver, since tracking string overruns is the bane of many C programmers. Unfortunately, Lighthouse

didn't implement many of the string routines with particularly efficient algorithms. For example, rather than using the Boyer-Moore string-search algorithm, Lighthouse's indexOfString: method merely steps through the string being searched character by character.

FCError is a class for registering and reporting error conditions. Errors can be signaled by raised conditions, sending messages to delegates, displaying panels for the user, or writing messages into a log file. Unfortunately, each instance of the FCError class can only announce itself with a single action — there is no way, for example, to log errors that display user-alert panels.

The remaining classes implement a variety of Objective-C containers for holding sets, lists, queues, and stacks of objects. These classes are remarkably similar to NEXTSTEP's List and HashTable classes — in fact, Lighthouse uses List and HashTable as the basis for the FCCollection hierarchy. Unlike NeXT's classes, the Lighthouse versions maintain certain relationships between the different classes: An FCSortedCollection allows the programmer to put only one copy of each object into the collection, and they are always kept in sorted order. As with FCString, few of the algorithms are implemented with an eye towards efficiency.

That's as far as the Foundation Classes go, leaving the entire collection somewhat limited. There are no powerful tools here for helping programmers solve old problems in new ways, no artful implementations of complicated algorithms that are easy to get wrong, and no general framework to speed application development.

Still, using Foundation Classes could save a company a modest bundle in development time and a bigger bundle in quality assurance. The pricing is unusually high for NEXTSTEP objects. This is either the first example of a new pricing paradigm for objects or an experiment that the market will reject.

by SIMSON L. GARFINKEL

Foundation Classes 1.0



A limited collection of 15 objects that might be helpful for large corporate developers. It lacks technical finesse but makes up for it in bug-free implementation and extensive real-world testing.

**\$4995 object code for five developers;
\$9995 source code**

Lighthouse Design, 2929 Campus Dr.
#250, San Mateo, CA 94403. 415/570-7736; 800-366-2279.

Desktop

SoundWorks research provides tools for recording, and mixing (16-bit stereo) audio within the NEXTSTEP user.

Version 3.0 adds features to the program's real-time mixing capabilities, giving the user control over NEXTSTEP's Audio Transform Compression, and a rev panel. You can now import (and export to) other formats, including Macintosh, Amiga, and SGI, with a version as sounds are created. The company reported that the Intel-based sound card testing at press time.

SoundWorks uses a tape-recorder metaphor with transport controls, meters for setting levels, and action takes place in the window, where portions of the waveform can be selected, pasted, or removed. Extensive options are provided for the waveform. Using M label passages for quick navigation, providing functions to a bookmark. The Paste command allows for reinserting on the fly and also lets a selection repeatedly at a value while fading it in and saving feature when looping.

The Mixer allows you to combine sounds by position, waveforms along a horizontal scale. Amplitude can be dragged handles along the top of the envelope plot.



SoundWorks lets you edit a sound with standard cut and paste commands.

Desktop Audio Studio

SoundWorks from Metaresearch puts powerful tools for recording, editing, and mixing CD-quality (16-bit, 44.1KHz stereo) audio within the reach of any NEXTSTEP user.

Version 3.0 adds long-awaited features to the program, including real-time mixing capability, extensive control over NEXTSTEP's ATC (Audio Transform Coding) sound compression, and a revamped Effects panel. You can now import sounds from (and export to) other platforms, including Macintosh, Windows, Amiga, and SGI, with automatic conversion as sounds are opened. The company reported that support for Intel-based sound cards was in beta testing at press time.

SoundWorks uses a familiar tape-recorder metaphor, complete with transport controls and VU meters for setting levels. Most of the action takes place in the Edit window, where portions of the waveform can be selected, played, copied, pasted, or removed entirely. Extensive options are provided for scaling the waveform. Using Marks, you can label passages for quick identification, providing functionality similar to a bookmark. The Paste Special command allows for real-time mixing on the fly and also lets you paste a selection repeatedly at a given interval while fading it in and out, a time-saving feature when looping sounds.

The Mixer allows you to combine sounds by positioning their waveforms along a horizontal time scale. Amplitude can be adjusted by dragging handles along a representation of the envelope positioned at the top of the waveform. Additional

SoundWorks 3.0



SoundWorks 3.0 is a powerful, yet accessible, tool kit for recording, editing, and mixing CD-quality sound under NEXTSTEP. The 3.0 version takes extensive advantage of the Sound Kit, providing real-time mixing capability and unprecedented control over ATC compression.

\$395

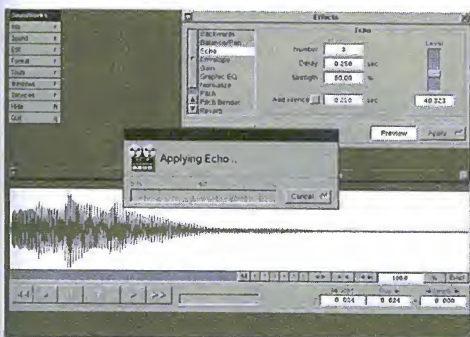
Metaresearch, 516 S.E. Morrison, Ste. M-1, Portland, OR 97214. 503/238-5728; info@metaresearch.com.

drag points can be added simply by clicking on the envelope. You can hear a trial mix in memory before committing your decisions to disk. Mixing information, including cross-fades, levels, and envelope settings, can be saved to disk independently of the sounds themselves.

The Effects panel has been completely revised to good effect. Available digital effects include envelope and pitch adjustment, reverb, echo, and delay, each with its own inspector for adjusting parameters. By combining effects, you can create new ones that can be saved to disk and reused. A plug-in architecture for effects, similar to that seen in image-processing software, will allow you to add new effects modules as they become available from Metaresearch and third parties.

For CD-quality direct-to-disk recording, you'll need a sound card that supports that function or an external digitizer; supported products are currently limited to those from Metaresearch, Ariel, and Singular Solutions. But the plug-in architecture ensures that new device modules can be added in the future, as NEXTSTEP moves on to different hardware platforms.

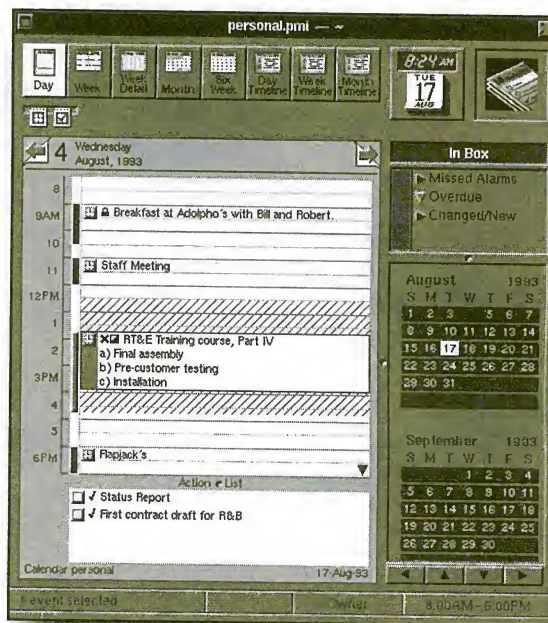
Now its third generation, SoundWorks is one of the most powerful sound-editing systems for any platform, and it's far easier to use than most. It's an essential purchase for anyone who wants to turn a mere computer into a digital audio workstation.



SoundWorks lets you edit a sound's waveform using standard cut and paste commands.

by LEE SHERMAN

Sarrus Introduces a Powerful Idea in Scheduling.



Simplicity.

Other scheduling software promises you power — if you're willing to give up ease of use. We developed Pencil Me In™ because you told us you needed both.

The ROI of Group Scheduling

Enterprises from small businesses to the Fortune 1000 are discovering that group scheduling gives them a tangible return on their investment. Why? Because people who work in groups spend a large part of each work day coordinating meetings, juggling action items, and hunting down conference rooms. Group scheduling software makes these tasks more efficient for individuals and for whole organizations.

Power and Ease of Use

Pencil Me In is the leader in group scheduling on NEXTSTEP for a simple reason. It's the only product that gives you the power

of true enterprise scheduling with the simplicity of a paper time planner.

Full-Featured and Flexible

Pencil Me In lets everyone manage their time their own way. Eight customizable formats with alarms and security. Click-to-type appointments and action lists. Group calendars to coordinate schedules, and shared calendars to reserve conference rooms.

Call Us for a Free Demo

Our customers love Pencil Me In. We think you will too. Call us at 1-800-995-1963 for a demo of Pencil Me In. And simplify everyone's life.



Sarrus Software, Inc.

565 Pilgrim Drive, Suite C
Foster City, CA 94404
(415) 345-8950
info@sarrus.com

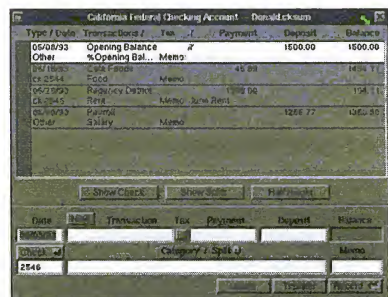
© Copyright 1993, Sarrus Software, Inc. All Rights Reserved. Pencil Me In is a trademark of Sarrus Software, Inc. NEXTSTEP is a registered trademark of NeXT Computer, Inc.

Circle 73 on reader service card

Personal Finances

With debits, credits, reconciliation, and related accounting arcana, financial management can be an intimidating process. But CheckSum, from Sirius Solutions, takes financial management and marries it to an intuitive interface without all the frustration. It compares favorably with industry-leader Quicken (not available under NEXTSTEP) in features and even sports a better user interface.

Each file in CheckSum is a complete financial system. This consists



The Transaction panel, with its simple layout and intuitive controls, is the heart of CheckSum.

CheckSum 1.0



CheckSum does an excellent job for personal finances but falls short in its claims for small-business accounting. Intuitive organization simplifies management of multiple bank and charge accounts.

\$95

Sirius Solutions, 340 Townsend St. #540, San Francisco, CA 94107. 415/957-9044.

of accounts such as your bank checking or VISA, transactions into and out of accounts, and categories across accounts that describe types of spending like entertainment and housing. A series of well-designed panels in CheckSum manages each of these functions.

Creating accounts is simple. You enter the account name, opening date, balance, type, opening balance, and limit warning. CheckSum allows six account types: bank, cash, other assets, credit card, loan, and other liabilities. In addition, the limit warning is not restricted to liability ac-

counts such as credit cards but can be used to set minimum balances for asset accounts as well.

You'll feel right at home in the Transaction panel. The upper portion of the panel looks like a check register, showing activity in your account, while the lower section is used for entering transactions. There are five transaction types – Check, ATM, Teller, Other, and Void – and they can be assigned to one or several of the categories from your categories list. There is a flag for tax-related items.

CheckSum makes reconciliation from a bank or charge-card statement a painless process. After entering any bank fees as normal transactions, open the Reconcile panel, enter the range of dates from the statement, double-click the transactions that have cleared, and compare the balance with your statement.

One of the best features of CheckSum is the categories. Categories are split between Income and Expense and come with some preset classes that you can keep or delete, depending on your needs. Unlike most personal financial-management

software, CheckSum allows for two layers of subcategories. For example, under your category for cars you might have subcategories for BMW and Lexus, each having additional subcategories for maintenance, gas, and service.

To get the overall picture, there are several reports from which to choose, while income and balance sheets are straightforward and easy to understand. CheckSum also produces reports that print transactions for all accounts, tax-deductible transactions, modified histories, or individual accounts.

For personal financial management, CheckSum is a great application with a comprehensive set of tools to handle most transactions. For small-business needs, however, it falls short in a few areas. For example, custom-generated reports are not available and there are no billing or invoicing options. Businesses may also find that the lack of control over the sort order for categories is a serious deficit.

by DONALD WILSON

New! High Resolution PostScript Slide Service

To: anyone@anywhere
Subject: NeXT E-Mail High-Resolution PostScript Service Bureau
Cc:

Deliver UpService Addresses Reply All Forward NeXT Mail Receipt

Drag, Drop, NeXTmail your NeXT based PostScript files.

Light Printing Co., Inc. is a full service typesetting and offset printing company. We can organize, output, color separate, and print your project, whether it's 500 business cards or 500,000 books. Light Printing can serve as your mailing house.

- All film output **FREE** if part of a total printing project handled through Light Printing.
- **Negative film for offset printing.** Four color process, or spot color separations. Resolutions 1200dpi, 2400dpi, 3600dpi.
- **RC-paper prints** 1200, 2400dpi, 3600dpi for mechanicals.

• **35mm Slide Service.** Traditional NeXT slide software. All NeXTstep applications that create a PostScript file can be sent to Light for High-Resolution overnight slide creation using new Polaroid equipment. 35mm, 4x5" slides or Polaroid prints available.

Next day via Federal Express. Call Daniel Wasserman for a price.

NeXTmail:
Internet: LightPrinting@gun.com
UUCP: uunet!lpmazda!dan

Light Printing Co., Inc.
101 Lafayette St. NY, NY 10013
Phone: (212) 226-5003
Fax: (212) 226-2777

Circle 71 on reader service card

CHARTSMITH

NOW SHIPPING!!!

CHARTSMITH™ is the presentation quality charting and graphing package for NEXTSTEP®. CHARTSMITH combines high quality graphics and an intuitive user interface to make creating spectacular charts quick and easy. Let CHARTSMITH bring your data to life.

BLACKSMITH
2100 Lee Highway, Suite 201, Arlington, VA 22201
Voice: (703) 524-6147
E-Mail: info@blcksmth.com

NEXTSTEP is a registered trademark of NEXT Computer, Inc. in the U.S. and other countries. CHARTSMITH is a trademark of BLACKSMITH, Inc.

Circle 86 on reader service card

The
NeXTS
moved
oriented
serve
inform
To
barred
rely on
Extra v
A one-
call 1-8
environ

NE
FA
199
Adobe's Best
Illustrator Five
Cube Rating

PL

am allows for two
ories. For exam-
tegrity for cars you
tegrities for BMW
aving additional
maintenance, gas,

erall picture, there
s from which to
ome and balance
forward and easy
heckSum also pro-
print transactions
ix-deductible trans-
histories, or indi-

financial manage-
is a great applica-
rehensive set of
ost transactions. For
eeds, however, it
w areas. For exam-
rated reports are
there are no billing
ons. Businesses may
e lack of control
er for categories is

WILSON



ty charting and
MITH combines
erface to make
t CHARTSMITH
our data to life.

(703) 524-6147
blcksmth.com
gton, VA 22201
and other countries.

The voice of the revolution. Monthly. Now that NeXTSTEP for Intel Processors is shipping along with NeXTSTEP PCs, NeXT has moved to the mainstream of corporate computing—and is leading the object-oriented computing revolution. NeXTWORLD's move to a monthly frequency will serve this expanding market with timely and comprehensive news and information—in one complete package.

Twelve times a year you'll have access to insightful commentary, no-holds-barred product reviews, and in-depth special reports. Because corporate buyers rely on timely product and business news for technology planning, NeXTWORLD Extra will once again become a regular late-breaking news section in every issue. A one-year subscription to NeXTWORLD is only \$29.95. To start your subscription, call 1-800-685-3435 and keep up-to-date with the world's hottest computing environment. Required reading for a developing world.



LoadEye 1.1



\$49

Aurora Software, 16 N Allen St. Madison, WI 53705. 608/231-3679, 608/231-1183 fax, 800/578-4809; info@as.com.

LoadEye is a commercial-grade performance monitor offering some features not currently available from similar programs in the public domain. LoadEye includes on-line help, the ability to monitor other hosts on the network, and the robust technical support that comes with commercial software offerings. On the other hand, LoadEye is limited to monitoring CPU performance while public-domain equivalents available for NEXTSTEP also show disk, memory, and network performance. For sites with policies that proscribe the use of public-domain software, however, or those who need to graphically monitor the performance of remote hosts, LoadEye provides a workable solution. **MC**

Reviews Desk

The reviews desk gang is restless. Our little needs are not as globally important as the Ten Most Wanted, but they are irritations nonetheless. Hope to see in this space in the future: a good keyboard macro/short-cut utility, some more great games, and connectivity to Newton technology. —DAN LAVIN

This month's gang—M CARLING (MC), SIMSON L. GARFINKEL (SLG), RICK REYNOLDS (RR), DAN RUBY (DR), AND MYSELF, DAN LAVIN (DL)

DragBook 1.0



\$79

Digital Expressions, 2142 Lynwood Dr., Schenectady, N.Y. 12309. 518/346-0568; DigitalExpressions@andi.org.

Joining the already rich crop of workspace extenders is this nifty utility for storing all your favorite files and resources in InterfaceBuilder-like palettes. Organize palettes as you like, including your choice of EPS and TIFF images, applications and documents, rich and plain text,

fonts, rulers, and sounds. Depending on the destination app, they are all just a drag-and-drop or copy-and-paste away. If screen space is limited, set the app to hide automatically after dropping. Using DragBook palettes is a snap; creating and editing them is slightly less intuitive. Engage! Desktop is still the class of this field, but workspace utilities are a matter of taste. Some users will be more at home with DragBook palettes than Engage! smart levels; the decision is yours. **DR**

Ikegami Monitor Model CT20D



\$3495

Ikegami, 23105 Kashiwa Ct., Torrance, CA 90505. 310/534-0050.

At NeXTWORLD, we see a lot of monitors. When we first saw an Ikegami monitor, we had high expectations. Ikegami has a reputation in the film and broadcast industry for making the best cameras and monitors that money can buy. We hoped that the quality of Ikegami computer monitors would be no different, and we were not disappointed. We found both Trinitron and Invar mask Ikegami monitors to be consistently well constructed, sync over an exceptionally broad range of frequencies, and have bright, rock-solid pictures. Newer models have digital controls. With higher prices than the competition, the buyer gets the confidence of compatibility with resolutions above 1280 by 1024 and unbeaten overall quality. **MC**

Announcing the East Coast NEXTSTEP™ Developer Conference

January 24-26, 1994

Sheraton Washington, Washington D.C.

Hear Steven P. Jobs keynote this event

Special NEXTSTEP bundle available for attendees

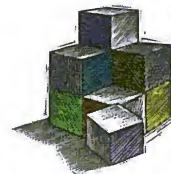
Visit with NEXTSTEP partners showcasing their latest solutions

Learn about object-oriented technology and applications

Two full-days of Conference Sessions

One day of NEXTSTEP Tutorials

Don't miss it—this is the place to be if objects are in your future



NEXTSTEP

East Coast

Developer

Conference

1-800-767-2336

For international registration, call 508-470-3880

AOKSIX

Circle 6 on reader service card

Model CT20D

hiwa Ct., Torrance,
-0050.

D, we see a lot
n we first saw an
we had high ex-
ni has a reputa-
d broadcast
ng the best cam-
s that money can
at the quality of
r monitors would
nd we were not
found both Trini-
ask Ikegami
sistently well con-
er an exceptionally
equencies, and
-solid pictures.
ive digital con-
r prices than the
buyer gets the con-
tibility with reso-
80 by 1024 and
quality. MC



7-3880

A0K3NX

The Latest News

486
NeXTSTEP '486

Business Analysis

Lt. Sullivan

NeXTWORLD

EXTRA

Now monthly inside every issue of NeXTWORLD

That's right. NeXTWORLD will now be available to you as a monthly magazine and NeXTWORLD EXTRA will once again become a regular late-breaking news section of the magazine. NeXTWORLD's move to a monthly frequency will serve the fast growing and expanding NeXTSTEP marketplace with timely and comprehensive news and information – all in one complete package.

For our regular subscribers, this means you will no longer receive NeXTWORLD EXTRA as a separate newsletter. Now you'll have all the information you need – in one place, every month – to make timely and informed decisions.

NeXTWORLD will continue to serve you and our expanding base of new readers with in-depth special reports; product, technology, and issue-oriented features; no-holds-barred product reviews; and community profiles. New monthly coverage will place increasing emphasis on subjects related to object-oriented, client/server computing; reflecting the importance of NeXTSTEP for Intel Processors in corporate downsizing applications. And because corporate buyers rely on timely product and business news for technology planning, NeXTWORLD EXTRA will be included as a late-breaking news section of the magazine. Our rumor columnist, Lt. Sullivan, will reclaim his regular space in every issue.

By combining the pages of NeXTWORLD Magazine and NeXTWORLD EXTRA every month, you'll get both comprehensive NeXTSTEP product coverage and timely NeXT market news – from the most experienced, respected experts in the industry!

NeXTWORLD EXTRA will be included as a monthly news section in the June/July issue and will be available to you on a monthly basis starting with the August issue – due at newsstands by July 27.

For new subscriptions, renewal, or subscriber questions, please call 800-685-3435. If you would like more information regarding our new corporate subscription rates (25 or more issues), please fax Catherine Huchting in NeXTWORLD Corporate Subscriptions Services at 415-978-3196.

Yes! Please start my subscription to **NeXTWORLD Magazine** for just \$29.95. I'll get 12 monthly issues of the most complete coverage of the NeXTSTEP market available – from in-depth special reports to timely product and business news. Send no money now. We'll bill you later.

NAME

COMPANY

ADDRESS

CITY

STATE

ZIP

Send your request to NeXTWORLD, Subscriber Services, P. O. Box 5038, Brentwood, TN 37024; or phone 800-685-3435 or 615-337-3322. For Canada and Mexico, please add \$18 in U.S. funds only. For foreign orders add \$40. Foreign orders must be prepaid in U.S. funds only. Check or money order accepted. Please fax 415-442-1891 to charge your Visa/MC. All prices include current GST tax.

5LEG9

Product Showcase

Turn here every issue for the latest-breaking, most interesting products in the NeXT™ marketplace. This is an exciting time for NeXT users. Development is exploding. The NeXTstep environment is proving to be a spawning ground for unique products. These ads keep you abreast of the best of what's out there. Showcase ads provide you with concise, easy-to-use information. Every one includes a picture, product information, and a handy reader service number.

All this in 1,075 words (picture = 1,000 words + 75 text.)

Client/Server Demographics

CensusPlus

- Direct Mail
- Zoned Advertising
- Store Location
- In-Store Product Mix
- Focus Groups
- Sales Territories
- Social Analysis
- Urban Planning
- Political Lobbying

Statistics ~ 9-Digit Zip Codes

Noncontiguous Geography ~

Over 3000 Demographic Variables

Complex Demographic Filters

Site Analysis

Add Your Own Data

Siege & Associates

Starter Kit : \$595

Demographic data available down to the census block group. Census tracts and block groups are cross referenced to 9-digit zip codes. Create and save "geography range" files based on location names (e.g. Dade county) or based on a distance from a point (17 kilometers from your home). Create and save "demographic filter" files. CensusPlus™ searches through an entire geography range to find the neighborhoods that meet your demographic filter requirements. Client runs on NEXTSTEP™ 3.0 (black) or NEXTSTEP™ 3.1 (white). Server runs on SQL Server™. 30 day money back trial offer.

Siege & Associates/1817 Lincoln Street/Evanston, IL 60201-2232/Phone: 708-475-6055
Fax: 708-475-6068/info@cenplus.com

Circle 102 on reader service card

Comple



Complete Access is a powerful database tool. Features include an advanced query builder, ad hoc querying, and a flexible reporting system. Approximate type of calculation for your reports, but it's a complete access to your data. Complete Access can be used with Interbase, or any other database.

Ocean Software, Inc./868
904-363-1646/info@oce

Simplify Database Kit™ Development

Write Better Database Applications Faster with Target Development's Database Kit Objects

- Retriever Palette™ - Build Queries Graphically
- Link Palette™ - Manage Blob Data
- Report Palette™ - Generate Custom Reports

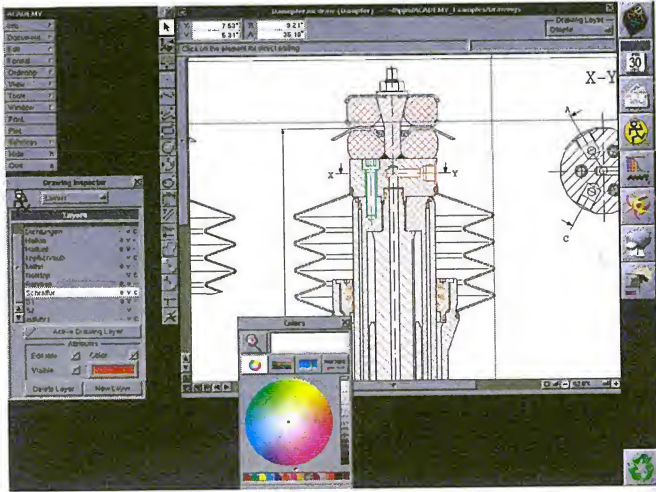


Database Kit palettes from Target Development can significantly enhance your application development environment. The RetrieverPalette™ provides a graphical means for building queries, fetching data, and sorting records. The LinkPalette™ provides objects for linking image, text, and sound files from the database to the file system via pathname. The ReportPalette™ provides a graphical means for generating custom hierarchical database reports. Technical documentation and email support are included. \$139.00 per development machine. \$269.00 for all three. Free demo versions available.

Target Development/72 West Elizabeth Street/Landisville, PA 17538/(800) 444-5435
(717) 898-9190/objects@targetdev.com

Circle 103 on reader service card

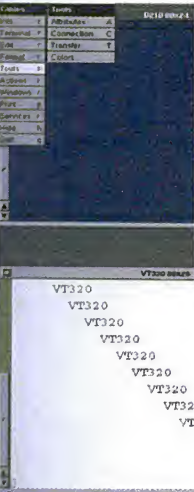
ACADEMY-CAD on NEXTSTEP!



ACADEMY™ is a 2D CAD program which through its open and flexible structure, extends across many business fields, from mechanical and electrical engineering to architecture. The graphics engine, already in use on other hardware platforms, was combined with NEXTSTEP to make ACADEMY™ powerful, yet easy and logical to use. You won't find cryptic commands, endless parameter lists and time wasting dialogs or complex menu structures. However, the well designed usage concept still allows for precise numerical inputs, calculation of geometry and construction data as well as exact placement. Promotional price = \$1195.00
North American Distribution/Dominion Technologies, Ltd./P.O. Box 3897/College Station, TX 77844/(409) 696-1578/academy@dtl.tamu.edu/Europe: +49 711 13 10 170

Circle 104 on reader service card

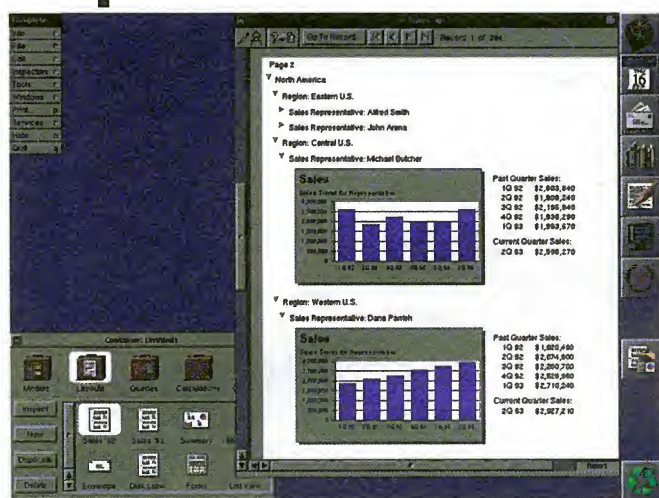
ACCURATE TER



Cables is the definition for NEXTSTEP. DG D211, Tektron board mapping; cor built in file transfer rations and more. V the clear choice for Price: \$189-\$399. A

Yrrid Incorporated/507 M
Fax (919) 968-7856/E-m

Complete Access



Complete Access is the first object-oriented report writing application. Features include an intuitive graphical query builder which lets anyone create ad hoc queries without learning SQL, charting, and optional outlining. Approximately 100 functions permit you to perform almost any type of calculation on your data. Use Complete Access to create not only your reports, but mail labels, envelopes, forms, list views, and more. Complete Access can be used with Rosebase, Sybase, Oracle, Informix, Interbase, or any other database for which an adaptor is available.

Ocean Software, Inc./8683 Autumn Green Dr. Suite #100/Jacksonville, FL 32256
904-363-1646/info@oceansoft.com

Circle 105 on reader service card

Product Showcase



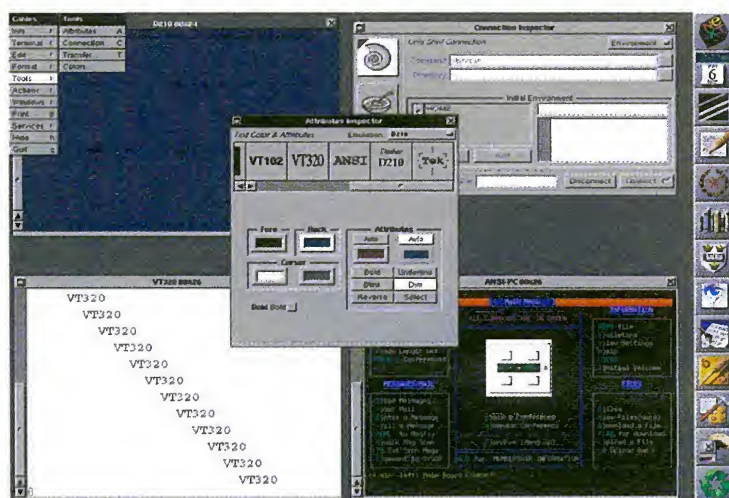
**SOFTWARE DEVELOPERS
SYSTEM ARCHITECTS
PROJECT MANAGERS**
NeXT Systems

SHL SYSTEMHOUSE is an \$800 million systems integrator and a leader in NEXTSTEP systems development. Explosive growth has created opportunities for Software Developers, System Architects, and Project Managers with sound experience in NEXTSTEP platforms. Candidates should have at least 1½ years Objective C. Experience with Sybase and/or Oracle preferred. Opportunities in Houston, Boulder, New York, New Jersey, Connecticut, and Washington, D.C. An Equal Opportunity Employer M/F/D/V. Mail or fax resume to: Jan Ackerman, Dept. NW-1193.

SHL SYSTEMHOUSE/950 S. Winter Park Dr./Ste. 200/Casselberry, FL 32707
Fax#: (407)767-6309

Circle 106 on reader service card

ACCURATE TERMINAL EMULATION FOR NEXTSTEP

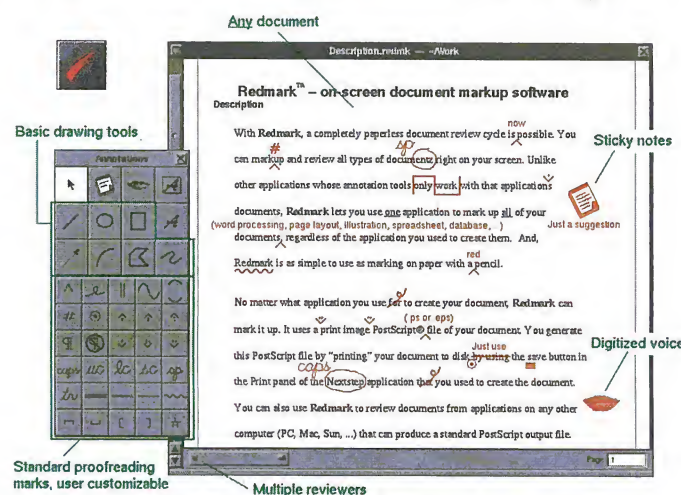


Cables is the definitive terminal emulation and communications application for NEXTSTEP. Features: DEC VT320, VT220, VT102, ANSI-PC, DG D211, Tektronix 4010/4014 emulations; function keys and keyboard mapping; connect directly to serial ports, shells, or remote hosts; built in file transfer protocols; full color support; drag and drop configurations and more. With accuracy, robustness, and ease of use, Cables is the clear choice for your interoperability and legacy application needs. Price: \$189-\$399. Available for Intel and NeXT hardware.

Yrrid Incorporated/507 Monroe St./Chapel Hill, NC 27516/(919) 968-7858
Fax (919) 968-7856/E-mail: yrrid@world.std.com

Circle 107 on reader service card

On-screen document markup...



Let Redmark™ software simplify and shorten your review cycle. Your reviewers put their comments into transparent graphic overlays on the document using standard proofreading marks, electronic sticky notes, digitized voice, basic drawing tools, and imported graphics. Redmark works with documents from any application. It is as easy as marking on paper with a red pencil – but better, because it is all done on-screen without paper. Only \$285 retail; site pricing available.

Epitome Incorporated/716 Summit Lake Court, Suite 100/Knoxville, TN 37922-3156 USA
(615) 675-0910/Fax (615) 966-2558/72677.1034@compuserve.com

Circle 108 on reader service card

Product Showcase

The Last Word in NEXTSTEP Systems

Pars International Computer
NOW SHIPPING
'486DX-66Mhz, EISA/VESA
up to 1MB Cache and 128 MB memory
starting at \$1995.

Made In USA

All of our systems are preloaded, configured, and tested with NEXTSTEP according to your requirements. Our customer service has made us No. 1, ask Clorox, Bank of America, Lawrence Berkeley Lab, UC Berkeley, Unisys Corp., EDS, PG&E, and many more.
Call Toll Free: 800/947-4742

Pars International Computer/ 22441 Foothill Blvd./Hayward, CA 94541/(800) 947-4742 (510) 733-0103 Fax (510) 733-0206

Circle 109 on reader service card

Industrial Strength OCR

Redeemable COUPON

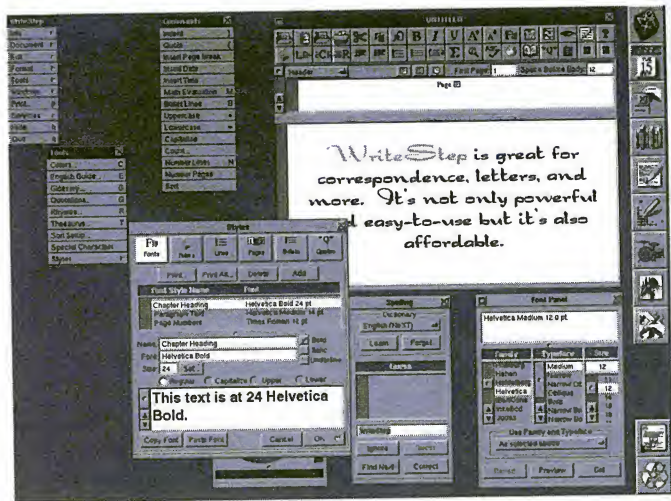
IF YOU CAN READ THIS FASTER
THAN YOUR OCR SOFTWARE...
IT'S TIME FOR A TRADE IN
500
YOUR OCR SOFTWARE IS WORTH \$500.00
Towards The Purchase of **ElectroWorX**
An Advanced OCR Application Based on
Xerox Imaging Systems **ScanWorX**™
For details, contact us at 503 222-2425
or E-Mail: info@insight.com
(Limit one per customer. Offer Expires 10/30/93)

ElectroWorX is a powerful OCR application for NeXT Computers based on Xerox Imaging Systems' ScanWorX API. Along with support for ten languages, ElectroWorX offers batch processing, templating and multi-page TIFF support.
ElectroWorX can be trained to recognize even "dirty" documents with multiple columns and typefaces as well as interspersed illustrations. Insight Software is also shipping the ICR TOOLKIT which provides object-oriented access to all features of the ScanWorX API.

Insight Software/3004 SW First Ave./Portland, OR 97201/(503) 222-2425
Fax (503) 222-0257/info@insight.com

Circle 111 on reader service card

Write Step~The NEXT Logical STEP in Word Processing.



WriteStep is the new word processor for NEXTSTEP computers. Features include page footers and headers, the easy to use tool button bar, and ability to load and save font, ruler, and bullet styles. Handy built-in references include writer's guide, thesaurus, quote library and rhyme dictionary. One dash button access to sorting, line numbering and line bullets.

Ciusa, Creative Imagineering America/3208 W. Lake St. Suite 133/Minneapolis, MN 55416
612-822-1604/email: info@ciousa.com

Circle 110 on reader service card

No Software for NeXTSTEP...? Try Again!

SoundHouse

DateWise

WriteStep

Color ArtBursts

SoundBursts

NOW SHIPPING!!!
7 Applications
10 Clip art Collections
2 Sound clip Collections

ArtBursts

StepTools

Rhythm King

ArtCollector

MediaTools

All of our products come in one 68040//Intel version with high-quality and on-line documentation, 30-day no-questions asked money-back guarantee, free upgrades for 120 days, helpful customer support, and a smile. Be forewarned - more great products are on the way!

FREE CATALOG! \$10 demo: includes all packages
Ciusa, Creative Imagineering America 3208 W. Lake St Suite 133
Minneapolis, MN 55416 612-822-1604 email: info@ciousa.com

Circle 112 on reader service card

Advertis

R S #	COMPAN
27,47,48	Alembic
76	Alembic
64	Athena
60	Avnet C
69	Bell Atl
79	Black &
86	BLaCKS
81	Blue Ro
110	Ciusa
112	Ciusa
25	Contem
97	Data Ge
104	Dominic
6	East Co
23	eCeyses
111	Econom
108	Epitome
	Epson A
96	GEC Co
99	HP/Ne
71	Light Pr
29	Lightho
63	Next Co

Picture y

Sh
or se

the

Make the most of yo
the work for you. TI
to a dedicated NEX
test marketing new p
ing; one four-color t
and a brief headline.
layout for you. Deac
kit, please contact N
Company Name / Street Ad
Fax Number / Modem Addr

Processing.



For computers. Use tool button styles. Handy text library and line numbering

St. Louis, MN 55416

Try Again!



Color ArtBursts



ArtBursts



With high-quality money-back guarantee support, on the way!

packages

St Suite 133
ciusa.com

Advertiser Index

RS #	COMPANY	PAGE #	RS #	COMPANY	PAGE #
27,47,48	Alembic	23	38	Objective Technologies	C4
76	Alembic	29	105	Ocean Software	45
64	Athena Design	11	59	Pages Software	2
60	Avnet Computer	12	109	Pars International Computer	46
69	Bell Atlantic CTS-San Francisco	3	51	Pencom	38
79	Black & White Software	10	73	Sarrus Software	39
86	BLaCKSMITH, Inc.	40	102	Siegeltuch & Assoc.	44
81	Blue Rose	14	106	Systemhouse Recruitment	45
110	Ciusa	46	103	Target Development	44
112	Ciusa	46	75	VNP Software	12
25	Contemporary Cybernetics	5		Word Perfect	16
97	Data General	C3	31	Workstation 2000	14
104	Dominion Technologies	44	107	Yrrid	45
6	East Coast Developer Conference	42			
23	eCeyses	37			
111	Economic Insight	46			
108	Epitome, Inc.	45			
	Epson America	15			
96	GEC Computers	13			
99	HP/NeXT	32-33			
71	Light Printing	40			
29	Lighthouse Design	C2			
63	Next Computer	30-31			

Picture your ad here!

Showcase your product
or service here, NOW ONLY:

\$900

through December '93

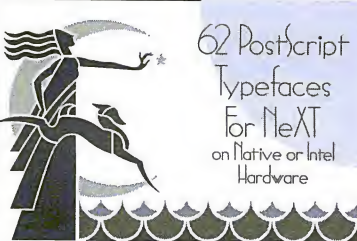
Make the most of your advertising dollar by letting NeXTWORLD do the work for you. The Product Showcase will give you extensive reach to a dedicated NEXTSTEP audience. It's perfect for introducing and test marketing new products. To participate, please submit the following: one four-color transparency or 35mm slide, 75 words of ad copy; and a brief headline. NeXTWORLD handles color separation and ad layout for you. Deadline: Six days prior to issue close date. For media kit, please contact NeXTWORLD.

Company Name / Street Address / City, State Zip Code / Telephone Number
Fax Number / Modem Address / E-mail, Etc...

Classified

NeXTWORLD magazine Classifieds is a quarterly feature. Rates effective February/March Issue. Per-line rates \$15.00. Thirty-six characters equal one line (count each letter, space and punctuation mark as a character). Four-line minimum, seven lines per inch. For column inch rates, please call or write for complete rate card information. Check or money order (or certified check) must accompany copy and be received six days prior to close date. All ads accepted at the discretion of the publisher. NeXTWORLD magazine 501 Second St., San Francisco, CA 94107 415/978-3182.

Fonts



In a commodity market, the Fonts For Design Art Deco Collection is an outstanding value, offering unique and interesting type for the design professional. Rising from art original in the 20's and 30's, this collection revives the creative ferment of those times.

The Collection comes with the Metrosfont Font Installer and a Font Selection Guide. Call or FAX keystrokes at 802-525-8837 for samples. Pay by MC, VISA, check or approved P.O. Price \$135 for 1 license, \$235 for 5 licenses. Available also from Paget Press' EAW CD.

APPLICATIONS

CheckSum™
Accounting App

CheckSum is an accounting & bookkeeping app designed for personal and small business use on the NeXT. CheckSum organizes your income, expenses, property, and cash, balances your checkbook, and prints checks. Cut & paste reporting is featured.

It's easy to track your finances in CheckSum!

Version 1.1: \$95-
(For Intel & NeXT)

Sirius Solutions, Inc.
(415) 957-9044
checksum@sirius.com



DESIGN



A weird thing is happening. The secret world of NEXTSTEP is suddenly being revealed in such thuddingly conventional venues as *Computerworld*, *BYTE*, *PC Week*, and even (yikes!) *Computer Shopper*. It's as though NeXT were a fresh-faced newcomer splashing on the scene with its revolutionary object-oriented environment. Where have all these publications been the last five years?

Over the course of my NEXTSTEP enchantment, I have had to accustom myself to the idea that I would get from the press little encouragement regarding this obscure object of my desire. I found myself afflicted by the same involuntary privacy of enthusiasm suffered by Amiga nuts or curling fans.

Of course, NeXT itself bears much responsibility for its public invisibility. With a culture as paranoid and inwardly directed as that of its largest (unnamable) customer, NeXT truly has been a black box. Despite this, I always suspected that the biggest reason behind the . . . uh . . . blackout was that there simply wasn't any money in writing about NeXT.

It's like this. The press gets paid by advertisers. While most computer journalists will swear a principled weightlessness against the gravitational forces of advertising, there remains an unmistakable (if fuzzy) correlation between the column inches a publication devotes to news about a product and the column inches its maker buys to promote it.

Please note that I'm not suggesting anything conspiratorial here. I'm just talking about how things operate in the natural world. In the jungle, the first rule is to survive. And if you don't think computer press knows

jungle law, you haven't been around it much.

But the position of NeXT and its related species in the overall food supply of computer journalism has never been significant. The company itself has had an advertising budget which is in line with the relatively small size of the company. It's a mere hors d'oeuvre to a critter like *PC World*. As a result, CP/M probably got more press last year.

So what's going on now? Why is NEXTSTEP all of sudden pulling so much ink? Part of it has to do with structural and cultural changes in the company. NeXT is now doing its own public relations and acting as though it genuinely wanted some.

Of course, the biggest change is that NEXTSTEP now runs on the architecture you buy when you don't want to think about it: Intel. From a purchasing point of view, this puts NEXTSTEP on an even commercial footing with a host of operating systems, both present and future, over which it has significant technological superiority, if not necessarily market share.

Maybe NEXTSTEP, like the Marla Maples of operating systems, is finally just getting its 15 minutes. Maybe the whole thing will pass like Pez Rocks. But right now, it's great watching the rest of the computer press discover what *NeXTWORLD* subscribers have known all along: If what you really want is a truly great object-oriented operating system and not just some future version of the Devil You Know, NEXTSTEP just works and it works now. And maybe it's even a little fashionable. ♦

JOHN PERRY BARLOW *conspires here each month.*

New Kid in Town

JOHN PERRY BARLOW

It Takes All Sorts

NEXT GAMES

by SCOTT KIM

Here is a little database of "Star Trek: The Next Generation" characters I created in Stone Design's DataPhile. Notice that all records are visible at once in a single spreadsheet-like table. Each record appears in a separate row, and each field within a record appears in a separate column.

A. First name	B. Last name	C. Last, then first name
Beverly Crusher	Wesley Crusher	Beverly Crusher
Deanna Troi	Beverly Crusher	Wesley Crusher
Jean Luc Picard	Jean Luc Picard	Jean Luc Picard
Wesley Crusher	Deanna Troi	Deanna Troi

If we sort by first name, we get example **A**. If we sort by last name, we get example **B**. If we want to completely alphabetize the names, we need to do a multiple sort by last, then first name, as shown in **C**.

Example **1** below shows a database of six names from a family from Altair IX. Each record spells a single name reading across, with just one letter per field. As you can see, the names are in alphabetical order.

1. Alphabetical order	2. Sort order: 3	3. Sort order: 326
B A T U N O	B O L E R O	K A L E R O
B A T U R A	K A L E R O	K O L U N A
B O L E R O	K O L U N A	B O L E R O
K A L E R O	B A T U N O	B A T U R A
K O L U N A	B A T U R A	B A T U N O
K O T E N A	K O T E N A	K O T E N A

Example **2** shows the database sorted by third letter. Notice that names with the same third letter stay in the same order they were in before they were sorted. For instance, Bolero stays before Kalero. Example **3** shows the database sorted by third letter, then second letter, then sixth letter, or 326 for short.

CONTEST

Can you figure out the sort orders for the other five examples? Names are in alphabetical order if they have the same letter in the field being sorted. Write your answers below. The number of blanks show how many fields are in each sort. The last two examples each have two possible solutions.

4. Sort order: _ _ _ _	5. Sort order: _ _ _ _	6. Sort order: _ _ _ _
K A L E R O	K A L E R O	B A T U N O
B A T U N O	K O T E N A	K O L U N A
B A T U R A	B O L E R O	K O T E N A
B O L E R O	B A T U N O	K A L E R O
K O L U N A	B A T U R A	B A T U R A
K O T E N A	K O L U N A	B O L E R O
7. Sort order: _ _ _ _	8. Sort order: _ _ _ _	
K O T E N A	K A L E R O	
K O L U N A	B O L E R O	
B A T U R A	K O L U N A	
B A T U N O	K O T E N A	
K A L E R O	B A T U R A	
B O L E R O	B A T U N O	

Up to ten lucky winners will receive a *NeXTWORLD* T-shirt. Address all entries to Puzzle Editor, *NeXTWORLD*, 501 Second St., San Francisco, CA 94107. Or fax us at 415/978-3196. And while you're at it, write us a note about the magazine. Entries must be received by November 15, 1993.

The "NeXT Meets IBM" puzzle in the September issue elicited more responses than we have T-shirts. The answers are:

ABC in style of Digital	IBM in style of Sun	Sun in style of Sony
Chanel in style of Xerox	Intel in style of Time	Time in style of NeXT
Digital in style of Chanel	NeXT in style of IBM	UPS in style of ABC
The GAP in style of UPS	Sony in style of the GAP	Xerox in style of Intel

the overall food
nt. The company
the relatively
critter like PC
year.
sudden pulling so
al changes in the
w doing its own
ting as though it
e.
gest change is that
on the architecture
n't want to think
purchasing point
TSTEP on an even
ith a host of operat
ent and future, over
t technological su
arily market share.
rating systems, is
ng will pass like Pet
computer press
all along: If what
ig system and not
TSTEP just works
ble. ♦

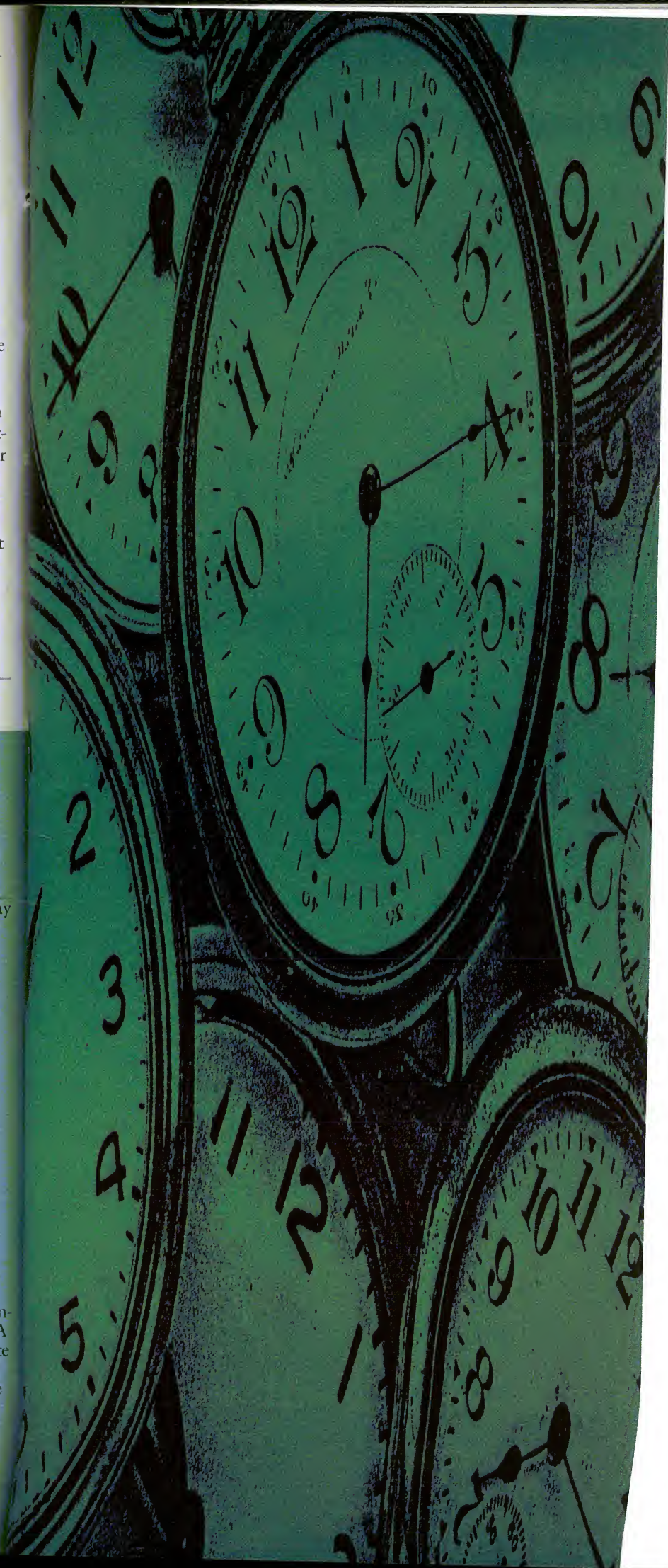
month.

amples? Names stay
field being sorted.
v how many fields
possible solutions.

ort order:
A T U N O
O L U N A
O T E N A
A L E R O
A T U R A
O L E R O

T-shirt. Address en
, San Francisco, CA
at it, write us a note
mber 15, 1993.
issue elicited more

in style of Sony
ime in style of NeXT
PS in style of ABC
rox in style of Intel



**IF YOU HAVE ALL
THE TIME IN THE
WORLD, THEN BY
ALL MEANS, DO IT
THE HARD WAY...**

**...IF YOU DON'T,
WHAT ARE YOU
WAITING FOR?**

**Your next step
should be with Data General**

You've chosen NeXTSTEP® because you need to develop mission-critical applications fast. Time spent configuring PC hardware and software and wondering if your NeXTSTEP environment will work is wasted time. When you buy a system from Data General, you just plug it in and start developing your critical applications immediately.

Data General DASHER II-486DX2/66LE2™ PCs running NeXTSTEP for Intel processors, combined with the power and high availability features of our UNIX® system-based AViiON® servers, give you not just high quality systems, but the full service and support of a company that knows client/server computing. After all, we've already spent our time creating the AViiON open systems servers ranked #1 in the recent *Computerworld* Buyers' Scorecard.*

And, we have been a partner with NeXT Computer for over a year. We have the commitment, knowledge, and experience to ensure that you maximize the return on your investment in NeXTSTEP systems.

So, if you don't have all the time in the world, take a minute to call **1-800-DATA GEN** and we'll tell you how easy Data General can make your next step.

Data General

Where the World is going!

Circle 97 on reader service card

* "The CW Guide to Servers: Buyers' Scorecard," *Computerworld*, March 22, 1993.

© 1993 Data General Corporation DASHER II-486DX2/66LE2 is a trademark and AViiON is a registered trademark of Data General Corporation. NeXTSTEP is a registered trademark of NeXT Computer, Inc. Unix is a registered trademark of Unix System Laboratories, Inc.

SERIOUS REPORTING

Hierarchical Reports

Create multi-level hierarchical reports of arbitrary complexity. Titles and labels can repeat on each level.

Cross Tables

Multi-directional data replication allows creation of cross tabular and other complex report sections.

Custom Elements

Build your own palettes of report display elements. Customize the look of your report.

Rotated Elements, too!

MAAS
BIOTEK

Growth S
Trial: A

Subj
1
2
3
4
5
Avg

Growth S
Trial: A

Subj
1
2
3
4
5
Avg

Confidential - D

MAAS
BIOTEK

Cell Regeneration Trial Report

Sample NS-93

Trial	A	B	C	D
1	5		4	1
2	5		5	
3	4	1	3	2
4	5		4	1

Summary: NS-93 Accelerated

Trial	Start	End	Δ	Days	$ \bar{\Delta} - \Delta $
1	7.16	6.16	1.00	27.4	0.24
2	8.23	5.94	2.29	35.4	1.05
3	7.52	6.28	1.24	32.2	0.00
4	6.96	6.50	0.46	19.3	0.78
$\bar{\Delta}$ 1.24			Avg. Dev. 0.50		

Regrowth Codes

A Full Regrowth
B Partial Regeneration
C Cell Acceptance
D Cell Rejection

Regrowth Distribution

Notes

This trial was extremely successful in showing the regenerative potential of Serum NS-93. We recommend going to full human study as soon as possible.

Static Images

Include logos, graphics, text and other static artwork in the report layout. These will replicate as the report grows.

Complex Analytics

Create formulas dependant on data or other calculations that are described earlier or later in the report

Rich Text

Retrieve formatted text (RTF) from the database.

Confidential - Do Not Distribute
Page 1 of 4
2:11am 7/11/1993



Also from OTI
**SmartField
Palette**

Winner of ObjectWare
Best Of Breed Award

Impress

The DBKit™ Report Writer

Impress™ is the missing piece of the DBKit. NeXT supplied the tools to create custom database applications but what you need are account statements, analytical reports, form letters and mailing labels. On paper. Without writing a program or learning PostScript®.

Impress lets you easily create reports from any DBKit accessible database. Use WYSIWYG layout tools to produce

Impress and SmartFieldPalette are trademarks of Objective Technologies, Inc. DBKit is a trademark of NeXT, Inc. PostScript is a registered trademark of Adobe Systems Inc.

everything from simple tables to multi-page hierarchical documents. Retrieve data with point & click query tools. Construct complex reports with an extensible scripting language.

Buy **Impress** and let Objective Technologies finish the job NeXT began. Report writing was never so easy.

OBJECTIVE
Technologies, Inc.

800.3.OBJECT 212.227.6767 info@object.com

Circle 38 on reader service card

NeXT

DEC 1993

PasteUp 2.1
Bugs Squashed,
Speed Gains

Evolu

How cu

